The Newspaper of Information Systems Management
December 5, 1994, Vol. 28, No. 49, 148 Pages, $6/Copy, $48/Year

COMPUTERWORLD

Industry pressures PC leaders

OEM tactics seek Win95 price drop

By Ed Scannell and
Stuart J. Johnston

OEM grumblings grew louder last week over what many have characterized as extremely high royalty payments to bundle Microsoft Corp.'s Windows 95 with their systems.

Reports from several sources said Microsoft is asking for royalties as high as $60 per system, compared with roughly $35 per system for the current combination of DOS and Windows. Such an increase could place a significant strain on the competitive fortunes

Windows 95, *page 12*

> *"After years of faulty developing and quasi-monopolization, Microsoft's 16-bit operating systems are stagnating at a low level while still being sold at an excessively high price."*
>
> **—Theo Lieven, chairman of Vobis Microcomputer AG, explaining the decision to replace Windows and DOS with IBM's OS/2 Warp on machines at his company.**

Intel miscalculates Pentium user backlash

By Jaikumar Vijayan

For Intel Corp., it has quite simply become the case of the bug that roared.

In what has quickly escalated into a major public relations nightmare, a flaw in Intel's flagship Pentium processor is threatening to undermine the company's relationship with the scientific and engineering communities, which the flaw primarily affects. And concern over the problem chip appears to be on the verge of spreading to a much wider, and more key, cross section of Intel's user base.

For instance, a *Computerworld* survey last

Intel, *page 14*

Chip shot

31%
Don't know
1%

BASE: 100 MICROCOMPUTER MANAGERS

Source: Computerworld survey

Free tools, upgrades to spice NetWare 4.1 debut

By William Brandel
and Laura DiDio

After two years and three poorly received dress rehearsals, the NetWare 4.1 show will finally open this week when Novell, Inc. announces plans to ship by year's end its most significant product ever.

Beta users report that Novell has resolved the technical glitches that have haunted the 4.x product family. And perhaps just as important, the company is addressing migration, positioning and pricing issues. In short, Novell is preparing to make a credible case for how and why users should make the NetWare 4.1 jump.

"I went through a couple of installations and was impressed with the ease of the upgrade and installation with the beta," said Jim Henderson, a network administrator and PC troubleshooter at Wagner Spray Tech Corp., a manufacturer of painting equipment in Plymouth, Minn.

In an effort to speed up the migration process, Novell is offering Version 4.1 users two utilities: its NetSync utility and DS Standard, which it will offer in promotional upgrades for NetWare 4.1, according to Jack Serfass, president of

NetWare 4.1, *page 141*

HELP!

WHERE DO YOU TURN FOR TECH SUPPORT?

IS staffs have more choices than ever for third-party PC software and hardware support. But IS must scrutinize these myriad providers. See CW Guide, page 101. Some vendors are targeting software asset management as the next support opportunity.
See Marketplace, page 128.

Users warehouse data on the cheap

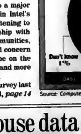
By Rosemary Cafasso

More and more users are looking for — and finding — ways to minimize data warehousing costs by avoiding the expensive services and products that have emerged from this hot market segment.

Depending on the size of the data warehouse, many new projects are setting users back by more than $1 million. While a recent Meta Group, Inc. survey on warehousing shows spending to be all over the map, nearly one-third of 650 respondents said they plan to spend $1 million to $5 million on these projects in the next two years.

Those costs can be off-putting. For example, Maryland Casualty Co. in Baltimore put a warehouse project on hold because the estimated cost of $1.5 million was just too much. Joe Olszewski, an assistant vice president, said that total included "a couple of tools to build it, reporting tools and programming time to strip out the data."

Warehousing, *page 16*



At Au Bon Pain, Mark Factor *devised cost-cutting measures*

Carmaker gases up client/server net, stalls on savings

By Stephen P. Klett Jr.
CENTERLINE, MICH.

Chrysler Corp. has adopted an unusual strategy for its enterprise-wide client/server architecture: Put the communications infrastructure together first, and then deploy the applications.

But the company has suffered its share of slings and arrows for being a pioneer. While the transition has gone smoother than expected, Chrysler, like the rest of corporate America, is still struggling with issues such as training, costs and moving its legacy SNA applications over to the new infrastructure.

For example, the projected annual savings of roughly $1.2 million to be gained from eliminating SNA and devices such as front-end processors have not yet materialized. Plus, installing a new high-speed backbone has increased the company's short-term information technology budget "by several million dollars," said David

Carmaker, *page 141*

Chrysler expects its client/server setup *to pay off long term. Left to right: David Bouskey, Kevin Bernard, Chris Waters.*

A PUBLICATION OF IDG

What's Inside

December 5, 1994

Cyberspace AND THE LAW

Inexperienced or malicious Internet users can open up your company to a slew of legal problems, from copyright infringement to defamation to possession of illegal adult materials. Acceptable-use policies can help you avoid ugly litigation, attorney Edward Cavazos says. See **In Depth**, page 114.

ATTORNEY EDWARD CAVAZOS: 'All it takes is one big lawsuit to make you wish you'd taken precautions.'

NEWS

- Price wars are expected in the **notebook computer** market next year when today's $5,000 high-end notebooks will sell for less than $3,000. *Page 4*

- Next's OpenStep is set for a mid-1995 delivery on Sun's Solaris operating system, and Next may offer support for Windows and Windows NT early next year. *Page 6*
- General Electric isn't the only one being hit by **hackers** on the Internet. *Page 6*
- An **object-relational** rapprochement is the theme of this week's DB/Expo New York conference. *Page 10*
- **Apple's** next-generation operating system is taking shape, but users wonder when they'll see it. *Page 12*
- Apple, IBM, AT&T and Siemens AG band together to improve **computer telephony** links in the digital age. *Page 12*
- Computer Associates pitches its alternative strategy for organizations reconfiguring their **legacy applications.** *Page 16*
- Vendor alliances highlight the importance of **customer** support in distributed, heterogeneous environments. *Page 28*

DESKTOP COMPUTING

- A test-drive of Novell, Inc./WordPerfect's **PerfectOffice 3.0** shows that it delivers on the promise of well-integrated yet robust applications. *Page 39*

WORKGROUP COMPUTING

- Users always want faster hardware. Ask anyone at rapidly growing, New York-based financial consulting firm **The Carson Group**, which recently brought in new Sun servers. *Page 45*

ENTERPRISE NETWORKING

- Early adopters advise users considering **Asynchronous Transfer Mode** to move slowly and cautiously and, most of all, invest in some education. *Page 69*

LARGE SYSTEMS

- Mainframe users have become accustomed to **hierarchical storage management** software. But winning over LAN customers proves to be another matter. *Page 75*

APPLICATION DEVELOPMENT

- Special promotions, deals and migration plans offered by **database makers** may seem like discounts, but would-be buyers should read the fine print. *Page 83*

MANAGEMENT

- Forget the ties, scarfs and tummy firmers. Here are some tips on **good books** for the hard-to-shop-for techie this holiday season. *Page 97*

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- In highly competitive and service-oriented industries, operations personnel are encouraged to **learn the business** for critical customer and end-user support positions. *Page 119*

COMMENTARY

- **Charles Babcock** bemoans the lack of leadership in the computer industry but sees positive signs in the technology. *Page 8*
- **Bill Laberis** says Intel turned an understandable error into a major gaffe in dealing with the Pentium chip flaw. *Page 34*
- **Patricia Seybold** says the electronic marketplace may become a hit, but only if basic market guidelines are applied. *Page 35*
- Carry over at least one valuable concept from the mainframe world into the client/server environment — corporate standards — **Eric Singleton** says. *Page 35*
- With flame mail, a crude minority of on-line residents — often operating anonymously — seems bent on spoiling the experience for the rest of us, **Paul Gillin** says. *Page 69*

Executive Briefing

With the holiday shopping season in full swing, many IS organizations are being put to the ultimate test by helping the nation's retailers make the most of this critical period. It's a make-or-break struggle when companies can ring up as much as 80% of annual sales in a five-week period, and IS must truly be a shining star. *Management, page 91.* Also in the retail sector, Ames Department Stores recently developed a new budgeting system to integrate disparate departments and cut reporting time. *Page 83*

Analysts say Kmart shouldn't blame ousted CIO David M. Carlson for its problems — eight straight quarters of declining profits. Those same experts say Kmart has been a leader in implementing some key technologies but that the retail chain has suffered from a lack of communication and direction on the part of top corporate executives. *Page 4*

Maybe data warehouses aren't so expensive after all. Many user organizations have found alternative ways to build data warehouses without investing the millions of dollars that such projects are typically expected to cost. Other users are avoiding the high price tags by just not doing the project. *Page 1*

When Chrysler wanted to move to client/server, it chose to build the highway — a new corporate network — before it allowed its departments to build the cars or applications. *Page 1*

Two vastly different health care organizations are revamping their data analysis methods. The Ministry of Health in British Columbia shifted its medical claims database from a mainframe to a massively parallel processor, while the state of Wisconsin is rolling out a Medicaid analysis system to get a handle on where its $2.3 billion really goes. *Page 75*

The IRS is improving its systems development practices but has a long way to go, an independent panel says. *Page 86*

The 5th Wave *by* Rich Tennant

RICH TENNANT
LAPTOP
COMPUTER

"WHY DON'T YOU TAKE THAT OUTSIDE, HUMPTY, AND PLAY WITH IT ON THE WALL?"

Notebook strategies

Portable buyers await a possible price war

New Toshiba box could kick things off soon

By Michael Fitzgerald

Notebook makers are preparing for significant price reductions next year and possibly the first-ever price war in the notebook market. Analysts say prices on high-end, 10.4-in. active-matrix color notebooks could drop below the $3,000 level by the end of 1995, more than $2,000 below today's typical starting prices.

Some users say they may cut back on desktop purchases and buy more notebooks if these price drops materialize.

"It'd be great if they'd bring down prices. Today we have exorbitant pricing, and even if you want [cheaper] monochrome [units], you can't get them," said one corporate information systems manager, who asked not to be named. The manager said if prices dropped, perhaps by as little as several hundred dollars, "we wouldn't buy more PCs, but we would shift to buying more portables."

Enough to go around

Analysts said they expect broad price decreases for notebooks, which have been in such high demand that some product categories have actually increased in price during the past 18 months, while vendors have struggled to meet backlogged demand. However, supply will catch up with demand for the first time in 18 months as screen makers pump out more and more active-matrix color screens.

Going places

IDC predicts that the U.S. notebook market will grow 16% next year, from 3.07 million units sold this year to 3.68 million. Similar worldwide growth is expected, from 6.59 million this year to 7.65 million.

Pricing is expected to fall toward the $3,000 level for notebooks with 10.4-in. active-matrix screens after Korean screen makers open plants in the second half of next year.

"We see it more as a price compression than a price war," said Bruce Stephen, an analyst at International Data Corp. (IDC) in Framingham, Mass. He said corporate users can expect to see today's high-end features in $3,000 to $4,000 products as early as the first half of the next year.

"You're going to get a heck of a lot more performance and features for your dollar in 1995," Stephen said. He agreed with other analysts that today's high-end features, such as 10.4-in. active-matrix screens and multimedia, will migrate quickly into the midrange market.

Helping to drive this trend will be current market leaders seeking to maintain market share in the face of new competitors, such as Hewlett-Packard Co. and Digital Equipment Corp., that are trying to establish themselves in the market.

Users said the potential for lower prices as the year goes on could affect buying strategies.

"This would mean a lot to us," said James Meneely, programming manager at Progressive Corp. in Cleveland. Progressive has rolled out notebooks to all its insurance salespeople, and Meneely said the typical life span of these systems is about two years.

"By [the end of 1995], we'll have a lot of people needing new notebooks, and it'll be interesting to see if that [$3,000] price pans out," Meneely said.

In any case, additional screens mean more vendors will have them, thus increasing competition, which will give corporate buyers significant leverage over the prices their current suppliers charge, analysts said.

"The market dynamic is going to change drastically with those screens coming on because a lot of the second-tier guys like HP, DEC and AST are going to have an opportunity to [fight it out] with the top tier," said Mike McGuire, an analyst at Dataquest, Inc. in San Jose, Calif. But the top tier — Toshiba America Information Systems, Inc., Compaq Computer Corp., IBM PC Co. and Apple Computer, Inc. — may make preemptive strikes.

First up at bat

For instance, Toshiba in January will ship to select customers a new version of its Satellite Pro with a 10.4-in. active-matrix color screen, built-in 5¼-in. CD-ROM drive, built-in AC adapter and integrated multimedia, including Musical Instrument Digital Interface capabilities, sources close to the company said. The product will be announced in March for about $5,500 with a 500M-byte hard drive and an Intel Corp. 25/75-MHz DX4 processor — about $2,000 less than an IBM ThinkPad 755CD, the sources said.

The ThinkPad 755CD offers features the Toshiba box will lack, among them a DX4/100 processor, built-in telephony functions, modularity, an onboard digital signal processor and docking station capabilities. But it does not provide an integrated AC adapter.

Officials at Toshiba, the world's largest portable maker, declined to comment on unannounced products or pricing actions. But one official, who asked not to be named, said, "I don't think you'll see pricing stay up where it is."

Feature-rich notebooks debut at Comdex/Fall '94. See page 41.

IS costs, leadership issues rattle Kmart

By Julia King

After eight straight quarters of declining profits, Kmart Corp. is on a rampage to cut costs, streamline operations and boost its image on Wall Street. But analysts say the lumbering retail giant may have shot itself in the foot by ousting David M. Carlson as corporate information systems chief.

Carlson was removed from his post two weeks ago and for now remains a man without a title at the company's Troy, Mich., headquarters. "Kmart should not be focused on who is running its IS organization but [on] who is running the company," said Tom Friedman, editor and publisher of "Retail Systems Alert," an industry newsletter in Newton, Mass. "Systems are not Kmart's problem. A lack of leadership is."

Marvin P. Rich *will get down to brass tacks but is now unclear*

Plagued by inventory problems, high costs and stiff competition from far more agile competitors, such as Wal-Mart Stores, Inc., Kmart's core discount store business has been under siege for more than a year. In September, the company said it would shut down 110 of its stores and cut its management workforce by 10% over two years. The month before that, it disclosed plans to sell off a majority share in specialty retailers The Sports Authority and OfficeMax.

What's missing

Analysts say Kmart, under Carlson's direction, has been a front-runner in implementing the technology needed to capture sales data in its nearly 4,000 stores and to drive automatic inventory replenishment programs. In the past 10 years, the company has plowed more than $1 billion into information technology related to quick response, according to Kmart's estimates

Nevertheless, the retailer has been slower than competitors in showing a significant return on information technology investments. Observers attribute that slowness primarily to management problems, including little or no communication among top managers, an absence of clear leadership and a failure to revamp the processes the new systems were intended to automate.

For example, many suppliers found the processes behind Kmart's automatic replenishment programs far too complex, according to an executive at an electronic data interchange outsourcing firm that serves retailers. As a result, only about 100 suppliers — as opposed to the 400 to 700 the company had targeted — signed up for the program.

Kmart's 1994 IS budget totaled $201 million — up 17% over 1993 IS spending

Yet these problems "are not systems problems. They have some of the most sophisticated stuff in the world," said a retail consultant who worked with Kmart for more than a year. "What we're seeing is a lack of re-engineering. They wanted to do reorganizations and organizational renewal, but when it came to actually executing that, they never wanted to step up to the plate."

Kmart's 1994 IS budget totaled $201 million, up 17% over 1993 IS spending.

But that is due to change, according to Marvin P. Rich, executive vice president of strategic planning, finance and administration who is overseeing Kmart's IS operations on an interim basis.

"The concept was to build the system of the future, but you can grow old doing that. What we need to do now is get down and dirty, speed up systems and fix what we've got," Rich said.

Exactly what that means remains unclear, however. In September, Carlson disclosed a plan to overhaul the company's 9-year-old store-based information systems, but whether Kmart will go ahead with the project is unknown. Such an investment is now at odds with a dramatic cost-cutting plan that Rich was touting as recently as 10 days ago. It calls for reducing overall company expenses by $400 million to $600 million next year, then cutting another $200 million in 1996.

David M. Carlson *remains at Kmart following ouster as corporate IS chief*

More likely, Rich indicated, is an aggressive push to more fully integrate in-place information systems. "We've done a lot of things like centralized buying, but we haven't merged that system through the general ledger," he said. "We've got to fix what we have now."

But Friedman said more than fast system fixes are needed if Kmart is to keep bankruptcy at bay. "Kmart had a tremendous opportunity to use technology, but because the business was so poorly run, it couldn't take advantage," he said.

Retailers' IS groups scramble to meet the holiday crunch. See page 91.

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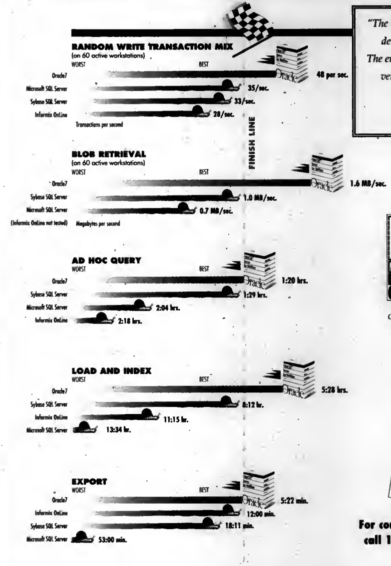

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ORACLE

Next plans Windows move

By Kim S. Nash and Jean S. Bozman

As Sun Microsystems, Inc. and Next Computer, Inc. celebrated the first anniversary of their joint development pact last week, users lobbied for Next to support Microsoft Corp.'s Windows 95 and Windows NT operating systems. Sources close to Next expect that support to be announced early next year.

The deed will be done through a port of OpenStep, they said. OpenStep is an operating system-independent version of Next's proprietary NextStep object development environment. Next and Sun published the OpenStep specifications on the Internet late last month.

Several Sun and Next users said last week they would welcome the move. Windows support would let users build object-oriented enterprise applications for deployment on Unix and Windows NT servers and Windows clients.

NextStep may be an attractive application environment — one that could increase the productivity of the 12-member information systems staff at the Alberta Cancer Board in Edmonton, Alberta, said Felix Fridman, director of IS at the center.

Breaking down barriers

But a lack of Windows support has, in part, stopped wholesale adoption of NextStep at the Cancer Board, which has 15 Sun servers, Fridman explained. "We do not see [Sun's] Solaris [as] being a desktop environment," he said. "We see Windows as having the momentum ... [and] attracting all the third-party development."

A year ago, Sun and Next signed a deal to create an operating system-independent version of NextStep, named OpenStep, that would run on Sun's Solaris. OpenStep will ship with Solaris in mid-1995, Sun executives said.

In an interview last week, Next Chief Executive Officer and President Steve Jobs stopped short of announcing Windows ports but said he is "optimistic" about working with companies, such as Microsoft, with which he once exchanged barbs.

"Hey, we made peace with Sun," he noted. "So we can do anything."

For its part, Microsoft denied earlier printed reports that a Next/Microsoft deal was now — or was ever — pending. "There is no special relationship between us and Next, and no deal is in the works," said Jeff Alger, a senior product manager at Microsoft's developer division who is responsible for Object Linking and Embedding (OLE) marketing.

Nothing in the Sun/Next deal prevents a Windows port, executives from Sun's SunSoft, Inc. unit said. Indeed, Sun would welcome the move as a way to boost market acceptance of OpenStep, said Bud Tribbie, vice president of object products at SunSoft in Mountain View, Calif.

"We are going to have to figure out and provide interoperability with [Microsoft's] OLE objects. How it happens, when it happens, I'm not going to discuss at this time," said SunSoft President Ed Zander.

But Sun has covered its bases by creating technology with Iona Technologies in Dublin to ensure that OpenStep objects link with Microsoft's OLE objects, he said.

For users eager to ditch Next's old, black desktop hardware, a port to Windows NT and Windows 95 cannot come soon enough, said Vincent Loud, IS director at Phibro Energy in Westport, Conn.

Moreover, support for Windows would boost Next's fortunes — the company has yet to see a full year of profits. However, after changing its strategy away from hardware last year, this year's sales are expected to reach $30 million, analysts said.

But some users wondered about the fate of NextStep once OpenStep ships next year. "Why would we even need to do business with Next anymore?" asked Jim Hnhorst, senior vice president of technologies and development at First Chicago Corp.

Next time

- ◆ **November 1993** Sun and Next agree to create OpenStep, a version of NextStep, for Solaris; Sun invests at least $10 million in Next.
- ◆ **This week** NextStep 3.3 native ports to HP/UX and Solaris enters beta testing.
- ◆ **Early 1995** Next to announce ports to Microsoft's Windows NT, Windows 95; support for OLE 2.0 and CORBA.
- ◆ **Q1 1995** SunSoft adds OpenStep to its Distributed Objects Environment.
- ◆ **Q2 1995** NextStep 4.0 enters beta testing; includes parts of Mecca, a new object environment from Next.
- ◆ **Mid-1995** Sun to ship OpenStep on Solaris.

Carson Group buys Sun servers. See page 45.

Next strategy

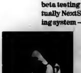
First, Next did it all: hardware, operating system and objects.

Then it ditched hardware.

Then it decided that selling a proprietary operating system would not make for a healthy future. It then signed deals with Unix heavyweights Sun, Hewlett-Packard Co. and Digital Equipment Corp. to port and/or resell variations of NextStep on their operating systems.

As Next CEO Steve Jobs said, "We have refined [our strategy]. What we really want to own is the object layer."

Next and its partners have made slow but steady progress carrying out that plan. A port of NextStep 3.3 to HP/UX is slated for beta testing this week, Jobs said. The product is actually NextStep — with its internal MachOS operating system — running as a layer on top of HP/UX.


David Powers

Next CEO *Steve Jobs says he does not anticipate an OS/2 port*

Digital, meanwhile, plans to port OpenStep, a generic version of NextStep, to its Open Software Foundation OSF/1 operating system by mid-1995.

In the IBM camp, a few shops run NextStep on the RS/6000 — the vestige of a Next/IBM pact that predates IBM's Taligent, Inc. venture, Jobs said. But Next does not actively sell NextStep for AIX.

An OS/2 port is not forthcoming "unless IBM wants to build a relationship with us," Jobs maintained. "There's no indication that will happen."

— Kim S. Nash

Internet hackers hit GE, others

By Gary H. Anthes

Hackers recently penetrated a number of General Electric Co. computers, causing the giant company to sever all its links to the Internet for 72 hours.

Observers said GE's experience is part of a roaring wave of Internet-borne computer security breaches pushed by an explosion of new technology in the hands of poorly trained users.

A spokeswoman for GE gave few details of the intrusion, which was first reported by GE's NBC television station in New York. She said unauthorized users had been discovered in some systems in the course of routine security audits and that GE's security measures have been "rebuilt and re-engineered as appropriate."

The spokeswoman continued, "We don't know what the [unauthorized users] were after, but it does not appear they got anything." She would not explain how GE was able to determine that no files were copied.

The spokeswoman said GE employs Internet "firewalls" — special gateways between the Internet and internal systems that are intended to enforce security policies. But it was unclear whether the auditors found illegal activity in the firewall systems or elsewhere.

GE is clearly not alone. "We are seeing a lot more incidents — between eight and 14 new incidents a day," said Barbara Fraser, manager of product development at the Computer Emergency Response Team (CERT) at Carnegie Mellon University in Pittsburgh. A single incident can involve thousands of computers, she said.

CERT is funded by the Pentagon's Advanced Research Projects Agency and has a staff of 16 people and a budget of $2.5 million. It does not investigate incidents at user sites to assess losses or go after perpetrators. Instead, it tries to determine how incidents occur, where the vulnerabilities are and possible fixes.

Following the discovery of the break-ins, CERT worked with GE to diagnose the company's security problems.

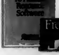
The rate of incidents CERT sees is up 76% from the rate last year, when the team logged 1,334 security incidents, said L. Dain Gary, operations manager at the CERT Coordination Center.

Fraser said recent computer break-ins stem from several root causes, principally the following:

- Hackers exploit vulnerabilities in Unix systems for which fixes are available but not implemented by users.
- The use of network monitoring tools, or "sniffers," to capture passwords is on the rise. Fraser said CERT has confirmed 110 uses of rogue sniffers in the past 10 months.
- Users continue to employ reusable passwords that are sent unencrypted over networks, where they are targeted by sniffers.
- Users often make configuration mistakes — for example, allowing insecure protocols such as the Network File System through their firewalls.

Fraser said underground tool kits, which test for and exploit known security flaws, add to the worries of network managers. "The intruders don't need independent knowledge anymore to be able to exploit some vulnerabilities," she said. "They can run one of these tool kits against your network or your system and break in that way."

"We are very concerned about the health of the Internet for a number of reasons," Gary said. "The single most devastating fact about the Internet is that users do not understand all the new technologies that they have incorporated, and the result is they put systems together without realizing all the services that can be exploited from the network."



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The shape of things to come

Over the course of a year, I get to listen to as many session speakers, keynote address makers and self-appointed visionaries as anyone, but I still have a simple question to ask: Does anyone know where we're going?

I see industry leaders investing their personal fortunes in parallel media servers meant to download movies. Exactly how soon do they think these servers will supplant the corner video store?

I see telecommunication companies, guided by the herd instinct, racing to form alliances to exploit the information highway. It is statistically impossible for all of them to have guessed right; perhaps none of them have. How much capital will they expend before conceding they positioned themselves in the wrong spot?

I see the best-laid plans of dominant industry figures going unexpectedly awry. Intel would like to migrate its customer base to Pentium processors, but it kept to itself for several months the fact that 2 million Pentium chips have shipped with a floating-point calculating error. The chances of it surfacing are remote, but once independent scientists discovered the error, Andrew Grove brazenly explained that Intel found the level of risk acceptable. He must have forgotten that his customers are intelligent enough to decide for themselves what level of risk they will accept. So there's a new joke on the Internet: What do you get when you cross a research grant with a Pentium processor. Answer: A mad scientist.

Even if the information highway is still fogbound and there's no one directing traffic, the shape of things to come is clear on two fronts.

I see the best-laid plans of dominant industry figures going unexpectedly awry.

Charles Babcock

- **Continued miniaturization:** NEC Technologies has started construction of a fabrication line for 256M-byte memory chips, a capacity that is 16 times the capacity of current high-end 16M-byte chips. The 8088 microprocessor started out as a 6 micron circuit device. The Pentiums coming off the new Phoenix assembly lines are etched with .6 micron circuits. IBM is producing memory chips at the .35 micron level and existing photo lithography techniques will take us to the .1 micron level. Soon, the hallmark of our age, the miracle of putting a computer on a chip, will be outmoded by the ability to put multiple computer architectures on a chip. That possibility is behind the Intel/Hewlett-Packard alliance to produce a joint x86/Precision Architecture microprocessor by the end of the decade. IBM officials have acknowledged they want to combine an x86 instruction set with the ability to run Motorola 680x0 instructions on the next-generation PowerPC chip, the unannounced 615 chip. Continued miniaturization will erode barriers between heretofore impassable architectures. Chips will run applications for three or four architectures at high rates of speed.
- **Continued componentization:** For three years, PCs have been shipping at the rate of 35 million to 40 million a year. The mass production of PC components has led to a rapid drop off in price. At the same time, the components have undergone a rapid improvement in quality. For the first time, high-level systems can be assembled from the lowest cost parts. The 5¼-in. disk arrays made by EMC and other manufacturers have redundancies and software assists that make them a match for much more highly engineered, highly reliable mainframe disks. EMC is now a challenger to what was once IBM's dominant market share in mainframe storage.

In a similar vein, multiprocessor servers and parallel servers are being assembled from microprocessors and absorbing work that in the past would have been assigned to the mainframe. The componentization of the IS infrastructure will continue at an accelerated pace. Instead of expecting a full line product company such as Digital or IBM to do it, IS managers will need to act as systems integrators, snapping together the most suitable components to supply the computing power their users need.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

News Shorts

Three senators ask Justice to investigate Microsoft/Intuit deal

Pressure is building on the **U.S. Department of Justice** to take a harder look at **Microsoft Corp.**'s pending acquisition of **Intuit, Inc.** Last week, three prominent members of the Senate Antitrust Committee expressed reservations about the deal. Democrats Howard Metzenbaum of Ohio, Paul Simon of Illinois and Edward Kennedy of Massachusetts sent a letter to Attorney General Anne Bingaman, strongly urging her office to more closely look into the longer-term implications of the deal. During the past few weeks, a growing number of companies have called the Justice Department's antitrust division to register disapproval of the pending deal, a spokesman said. Separately, Intuit reported a loss of $53.6 million for its first quarter ended Oct. 31. Sales rose, however, to $68.2 million vs. $47.4 million for the same quarter last year.

Windows 95 slated for June

Despite swirling rumors at last month's Comdex/Fall '94 that delivery of Windows 95 — the next version of Windows — has slipped to late next year, sources who were briefed said last week that Microsoft's internal schedule calls for the product to be on retail shelves by early June. A new beta, called M8, will ship by the end of January, with testing completed "most likely in late March," according to nondisclosure agreements. M8 is expected to hit manufacturing by mid-May and to take another two to three weeks before it arrives in retail stores in "reasonable numbers," according to sources.

Benchmarking software offered

For the cost of shipping and handling the software, users can now get the latest personal computer benchmarking suite from **Business Applications Performance Corp.** in Santa Clara, Calif. The nonprofit organization, whose members include companies such as Intel Corp., IBM, Microsoft and Compaq Computer Corp., last week said it will provide free copies of SYSmark 95 for Windows. Performance benchmarks can be done by users of the product at their own sites. For further information, contact Business Applications Performance at (408) 988-7654.

Check fraud has high-tech causes

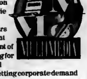
Check fraud was up 136% last year over 1991 levels, and the culprits include desktop publishing technology and laser printers, according to a report by the **American Bankers Association** in Washington. The study revealed that the now-affordable technology has made it easier for organized crime rings to counterfeit payroll checks. Countermeasures include bank software that checks for suspicious-looking serial numbers, electronic deposit of payroll checks and discouraging employers from using laser-printed checks on plain paper.

Floppy disk drive prices falling

Floppy disk drive revenues are falling down and they can't get up, according to a report issued by **Disk/Trend** in Mountain View, Calif. It's not because of low sales: Shipments of 3½-in. drives are expected to grow 9.1% on average through 1997. The prices are simply declining. In 1990, the average OEM price for 3½-in. drives was $46. By 1993, the price was $34, and it is projected to drop to $21 in 1997.

IBM readies storage device

IBM's Storage Systems Division said it plans to ship in the first quarter a multimedia device that can send out multiple "streams" of data from a single copy of the information. The IBM MediaStreamer will initially target on-line information services, hotels, movie production studios and even karaoke bars [CW, Nov. 28]. But Kent Winton, vice president of worldwide marketing for the storage unit, said IBM hopes to start getting corporate demand for uses such as training later next year as the cost of storage continues to drop. The MediaStreamer supports 16 to 64 streams and costs $2,000 per stream, Winton said.



More Pentium machines coming

Compaq last week finally announced a desktop based on **Intel's** 90-MHz Pentium processor, just as user concern over a flaw in the processor was reaching a crescendo (see stories pages 1, 14). The new system, which will come standard with DOS-based virus detection software, features Peripheral Component Interconnect local-bus graphics, integrated Ethernet and Fast SCSI-2 controllers. Prices start at $3,999 for a 535M-byte hard drive and 16M-byte standard RAM. Separately, **Digital Equipment Corp.** will introduce its first Pentium-based multiprocessor servers this week. Although the new Prioris HX line will include four-processor models by early next year, the first two systems are single- and dual-Pentium-90 machines, with prices starting at $5,699 and $8,699, respectively.

HP turns up pricing pressure

Hewlett-Packard Co. made a bid for higher ground in the PC market, cutting prices for the second time in three months. The price cuts came on both PCs and servers and ranged as high as 26%. HP's pricing is now up to 30% less than competitors' on certain models.

SHORT TAKES **PeopleSoft, Inc.** won a $4 million deal for human resources software from **Siemens AG** in Munich. . . . **General Electric Co.** has joined **CommerceNet Consortium, Inc.**, the Menlo Park, Calif.-based industry group that promotes the Internet as a viable platform for business-to-business transactions. . . . **Network General Corp.** and **Aim Technology, Inc.** will reveal this week a pact to integrate their product lines to create end-to-end client/server network management.

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Chip Bennett and his Oracle CDE design team. Clockwise from top;

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Peter Munoz,
Shelley Chan,
Ben Krug,
Kathy Clarke,
Herbert Poveda,
and
Nina Kant

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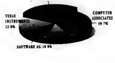

*Oracle sells more tools than any independent software company**

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Oracle, HP eye object deal

By Kim S. Nash

Oracle Corp. and Hewlett-Packard Co. plan to announce today that Oracle will jointly market HP's Odaptor object-oriented database link, sources at both companies confirmed last week. The deal offers an interim option to Oracle users anxious for object support that is so far missing from Oracle's products.

The agreement, scheduled to be unveiled at this week's DB/Expo New York conference, is one more step in a forced rapprochement between relational database players and object technology companies, users and analysts said.

"I am glad to see that there are growing options there for people who — surprise — don't want to throw away relational databases in order to do object work," said Real Forte, director of research and development at Logibec Group Informatique Ltd. in Quebec. The medical software maker uses databases from both Oracle and Sybase, Inc. as well as a variety of object tools.

The two camps "are starting to come to grips with the fact that they should have been working together all along," said Hugh Bishop, an analyst at Aberdeen Group in Boston.

Fifteen to 20 engineers are working on adding object features to the Oracle 7 database engine, said Jnan Dash, vice president of product strategy and technology at Oracle. "But the reality is that front-end [object tools] will probably come out sooner [from Oracle] than back-end" tools, he said.

Objects in DB/Expo spotlight

The much-fabled Oracle 8, which Oracle leader Larry Ellison started talking about more than three years ago, is said to be Oracle's object answer. But Dash declined to specify a timetable for the product. Meanwhile, HP's Odaptor makes sense for Oracle users because "it's available, and it's quick," he said.

Moreover, the initial convergence of object and relational database products is a theme expected to dominate DB/Expo this week, said Colin White, the show's coordinator and an analyst at Database Associates in Morgan Hill, Calif.

"Users are still trying to wrestle with what object technology is and how to get into it. The sides have got to come together," White said.

On the object side, Illustra Information Technologies, Inc., Versant Object Technology Corp., IBM partner Object Design, Inc. and other object database makers all plan to unveil gateways and other links that let users manipulate relational data with object-oriented tools.

From the relational side, Informix Software, Inc. plans to announce it will embed object-based document management into its OnLine database.

MasPar enters race

The rough-and-tumble relational database market will get a new entrant at DB/Expo this week: tiny MasPar Computer Corp., which is introducing a database for its massively parallel processors.

Until now, MasPar's MP-2 systems have supported only flat files through SAS Institute, Inc.'s SAS System software. The new Decision DB is targeted at off-loading databases of 40G bytes and up from IBM mainframes, and it conforms to the Open Database Connectivity and Sybase Open Client interfaces, MasPar said.

Gary Smaby, president of Smaby Group, Inc., a consultancy in Minneapolis, said MasPar will have to offer performance at least 10 times faster than big decision-support vendors such as AT&T Global Information Solutions and Tandem Computers, Inc. to get the attention of commercial users.

—Craig Stedman

Apple's 'System 8' pushed back

By Mark Halper

Apple Computer, Inc. will not be outdone by Microsoft Corp. in the operating system suspense game.

Like the erstwhile Chicago, now called Windows 95, Apple's Copland or, as some call it, System 8, has taken on a shifting feature set and availability date that has left some users unsure of what to expect.

Apple, which had targeted mid-1995 for Copland's release, has recalibrated for a late 1995 liftoff, said John Mracek, Apple's senior director of operating system platform marketing. Users and Apple watchers speculated that indecision on Apple's part is contributing to the delay.

Pieter Hartsook, an Apple watcher and editor of "The Hartsook Letter" in Alameda, Calif., claimed Apple is contemplating whether to leave out compatibility with the 680x0 microprocessor — which Apple recently replaced with its chip of the future, PowerPC. He said Apple should leave it out if it wants to hasten availability.

"According to my forecast, by the end of 1996, over 50% of the installed base is going to be [PowerPC-based] Power Macs," he said.

Vito Salvaggio, Copland product manager at Apple, said, "Whatever we do with Copland, we will optimize it for the Power Mac." Apple will not sacrifice performance of Copland on Power Macintosh for the sake of a 680x0 port, he said.

Old machines out of luck

Moreover, Copland will not run on earlier 68010 and 68020 machines because they have insufficient memory management, Salvaggio said. Copland technically can run on the later 68030- and 68040-based models, which are a "significant percentage" of Apple's installed base, he noted. Salvaggio declined to commit to a 68000 port.

In another example of uncertainty, Mracek confirmed that Apple is "investigating" whether to add Taligent Corp.'s Taligent Application Environment (Tal AE) on top of Copland to help information systems shops quickly develop enterprisewide programs.

Tal AE is an object-based development technology that Apple plans to include in Gershwin, the operating system scheduled to follow Copland. Tal AE might work in Copland because it requires preemptive multitasking and because Apple will include system-level pre-emptive multitasking in Copland, Mracek said. In pre-emptive multitasking, each application or routine runs in its own memory space, and a crash in one space will not cause a crash in another.

Mracek said preemptive multitasking in Copland will be limited to the system level. Application preemptive multitasking, in which applications are protected from one another, will follow in Gershwin, he said.

Users said they are looking forward to several other features in Copland, including the following:

- Apple's OpenDoc document management software.
- Apple's Open Transport software for shuttling data across environments.
- Apple's MovieTalk software, which will provide compression and decompression of networked video data.

Pop the kernel

It is an unspecified microkernel that will enable Copland's system-level multitasking, said John Mracek at Apple. But like Nassi, an Apple vice president, said the company is developing its own microkernel, called NuKerne, that would host multiple personalities, including Taligent.

Specs set for telephony integration

By Mark Halper and Thomas Hoffman

The battle to improve communication among computers and telephonic devices heated up last week as Apple Computer, Inc., IBM, AT&T Corp. and Siemens AG announced a set of specifications intended to standardize computer telephony integration and data transfer.

The initiative, called Versit, hangs on several technologies, including Apple's Geoport hardware interface and AT&T and Novell, Inc.'s server-based Telephony Services Application Programming interface (TSAPI).

Combined, these technologies would improve a gamut of everyday operations. Communications between computing devices from handhelds to mainframes would be simplified and standardized to ease interbusiness communications and home office computing.

For example, an insurance agent working from home could use his computer to initiate phone calls and also use it as an answering machine while away. The computer would be able to store voice mail and receive data information through the same phone call.

Users had mixed reaction to the initiative. At least one user, Ken Fauerbach, manager of user services at New York University's telecommunications department, said Versit would go a long way toward helping the school mesh its IBM and Apple videoconferencing systems, which currently cannot "talk" to one another.

But while Apple President and Chief Executive Officer Michael Spindler was hailing Versit as "comparable to GATT," observers could not help but notice those missing from the glitzy New York press conference. The initiative does not yet include any x86-based PC vendors — even IBM's and AT&T's backing comes from telecommunication divisions — or Microsoft Corp.

The absence of PC vendors drew competitive fire from Microsoft, which is backing technologies not currently endorsed by Versit. "This is a bunch of wanna-bes from the telecom world who want to set PC standards," said Charles Fitzgerald, a product manager in Microsoft's digital office products group.

In praise of competition

Gary Andresen, principal analyst at Dataquest, Inc. in San Jose, Calif., suggested instead that a turf war would actually benefit users because the two camps will aggressively race to provide better ways to tie together disparate devices.

Jim Burton, chief executive officer at Boston consulting firm C-T Link, Inc., said PC companies are considering other technologies under development from Microsoft and another notable Versit no-show — Intel Corp.

Intel's forthcoming serial bus threatens to take on Geoport as the desktop device best suited to speeding up computer-to-telephone communications [CW, Nov. 7]. It is strongly backed by Microsoft and PC vendors, including Compaq Computer Corp.

Also, Microsoft's Telephony Application Programming Interface (TAPI), which resides on the desktop and will be part of Windows 95 (the next version of Windows), is similar in functionality to Versit-backed TSAPI.

Dueling dial tones

Versit technologies	Competing technologies
Novell and AT&T's server-based TSAPI	Microsoft's TAPI, backed by a host of providers and switch makers
Apple's Geoport hardware interface	Intel's serial bus, backed by Microsoft and Compaq

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Windows 95

CONTINUED FROM PAGE 1

of many smaller OEMS.

Signs that pressure is building on Microsoft to lower its proposed licensing terms for the upcoming operating system include the following:

- Hewlett-Packard Co. last week said it might not bundle Windows 95 unless Microsoft lowers its price. In off-the-record interviews, two other OEMs voiced similar threats.
- Vobis Microcomputer AG, the fourth-largest European PC supplier, issued a statement that as of Jan. 1, it will swap out DOS and Windows for OS/2 on most of its machines. It cited excessively high royalty pricing as one reason.
- IBM has claimed growing support among OEMs for its OS/2 Warp. For instance, HP claims that 20% of its users now replace Windows with OS/2 and that when it enters the consumer market next year, it may do so with OS/2, not Windows 95.

While many OEMs are complaining behind the scenes, few are willing to make public statements because they fear retaliatory action from Microsoft such as withholding market development funds. Some observers are more blunt, saying most OEMs are simply trying to negotiate better royalty deals with Microsoft through the press.

Microsoft officials, meanwhile, maintained that IBM may be inciting some of this unrest by trying to buy its way into the market. Steve Ballmer, Microsoft's executive vice president of sales and support, claimed IBM is "giving [OS/2] Warp away for free."

IBM reportedly has offered market development funds to some OEMs and in return is charging less than $10 a unit.

"It's a very desperate offer by IBM. They're saying, 'We don't care if we get paid,' " Ballmer said.

Vobis Chairman Theo Leavin is not among the fainthearted, but he may be among those baiting Microsoft. Vobis said it plans to deploy OS/2 on most of the 500,000 systems it expects to ship in 1995. It paid Microsoft $22 million in royalties on systems it shipped in 1994.

Still, Microsoft's proposed royalties appear to be causing growing dissatisfaction among many U.S.-based companies, including some Top 10 firms.

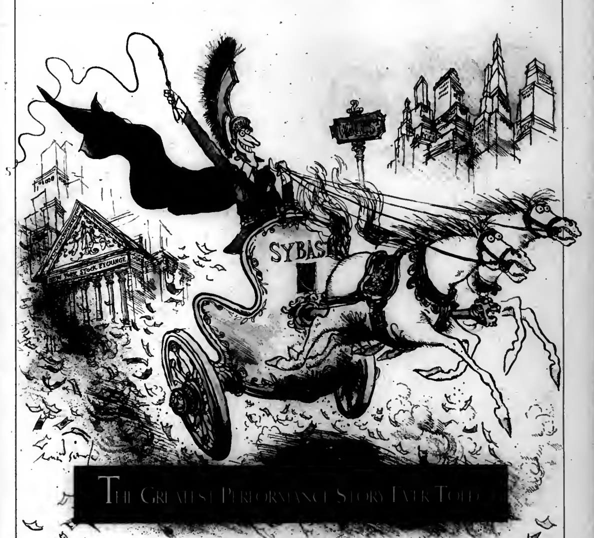
"If there's a $50 difference between a machine with a Microsoft [operating system] on it and a machine with [one from] IBM, consumers aren't going to care. They're going to buy the cheaper machine," said Jacques Clay, general manager at HP's PC division. But Ballmer insisted Microsoft has not yet quoted OEMs prices for Windows 95 and that PCs with it will not cost more.

Not all OEMs said Microsoft is overcharging for Windows 95. Some said the added value it provides (true 32-bit multitasking, universal mail support and various ease-of-use aspects) makes it worth the price.

Senior editors Michael Fitzgerald and Mitch Betts contributed to this story.

Deciding factor

A Vobis statement said the company's decision to move to OS/2 was based in part on Microsoft's demands for payment for all systems Vobis sells "regardless of whether they were delivered with Microsoft programs or not," a practice that allegedly makes it impossible to offer users competing products. If true, this claim — which Microsoft denies — would violate the consent decree Microsoft signed last July as part of its settlement with the U.S. Justice Department.



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Hardware vendors open hot lines

Set to replace faulty Pentiums

By Stephen P. Klett Jr.

PC hardware vendors are certainly going to a lot of trouble to set up customer hot lines for a bug in the Pentium chip that Intel Corp. claims will surface only once in every 9 billion divide operations.

The Pentium chip contains a flaw associated with floating-point operations that can lead to mathematical errors (see story page 1).

Most major desktop vendors, including IBM, AT&T Global Information Solutions (GIS), Gateway 2000, Inc., Compaq Computer Corp., Dell Computer Corp. and Intel, have established toll-free numbers solely to assist customers experiencing problems related to the bug.

Looking on the bright side

Meanwhile, PC makers that have strategically focused on Pentium-based systems, such as AST Research, Inc. and Gateway, are taking Intel's optimistic stance that the bug's occurrence is too rare to have a major impact on customers, sales and Pentium rollout plans.

From the beginning of the controversy, Intel has said it will handle problems that surface on a case-by-case basis. According to a spokeswoman for the company, Intel will decide which users qualify for chip replacement based on the kinds of applications being run at a user site.

In a *Computerworld* survey of 100 users conducted last week, 68% said Intel's policy is unfair.

For its part, IBM said it will work with customers to determine whether they do indeed have the problem and will then work on a solution, which may include chip replacement. Most other vendors are providing similar assistance.

An AST spokesman said any AST customers experiencing the problem should contact Intel directly.

The following is a list of major PC vendors' Pentium hot lines:

- Intel: (800) 628-8686; international: (916) 356-3551.
- IBM: (800) 426-3389.
- Compaq: (800) 652-6672.
- AT&T GIS: (800) 330-4904; international: (803) 843-7076.
- Gateway: (800) 846-2000.
- Dell: (800) 403-3355.

Test your own PC

The following are two simple tests you can try on any calculator, program or spreadsheet running on a Pentium-based PC to see if it has the bug:

1) Divide 5,505,001 by 294,911.
- The buggy answer is: 18.66600093
- The correct answer is: 18.66665197

2) Divide 4,195,835 by 3,145,727.
- The buggy answer is: 1.33373907
- The correct answer is: 1.33382045

The chances of randomly coming across numbers such as these that trigger the bug is small. There are 1,738 numbers out of 64 trillion combinations of numbers that can actually trigger the bug.

A number of sites are available on the Internet to handle questions related to the Pentium flaw. To find information on the Pentium bug via the Internet, use anonymous ftp://www.isi.edu/pub/carlton/pentium/FAQ.

Intel also has an automated fax-back service. Call the vendor at (800) 525-3019 and request document No. 9768 for a statement regarding the bug.

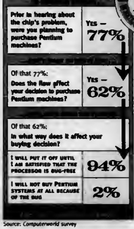
Source: FAQ on Internet at www.isi.edu.

Intel

CONTINUED FROM PAGE 1

week of 100 users at Fortune 1,000 companies revealed that a sizable number — 65% — are concerned about the problem (see chart below), and 21% expect it will significantly affect their applications. In interviews, other users complained they may have to recheck months of calculations performed on Pentium systems.

Meanwhile, systems vendors, anticipating a deluge of calls, are busy setting up help lines and making policy statements about their Pentium-based systems (see story above).



Prior to hearing about the chip's problem, were you planning to purchase Pentium machines? Yes — 77%

Of that 77%: Does the flaw affect your decision to purchase Pentium machines? Yes — 62%

Of that 62%: In what way does it affect your buying decision?

I will put it off until I am satisfied that the processor is bug-free	94%
I will not buy Pentium systems at all because of the bug	2%

Source: Computerworld survey

And as Intel's stock fell by $2.38 amid rumors of a possible recall of all Pentium chips, a noticeable number of users commenting on the Internet last week threatened to send back or stop purchasing all Pentium products. This was despite the fact that Intel insists the flaw is insignificant to all but a fraction of users.

According to Intel, the source of the bug has already been eliminated in several sample chips the company has started producing. The bug-free chips are not expected to be widely available for at least several months, observers said.

Doubting users

Industry analysts tended to agree with Intel's view about the magnitude of the bug, but scores of technical and engineering users on Internet newsgroups rejected Intel's defense.

"It doesn't matter how often the bug occurs; its very presence will affect user behavior," griped one programmer who asked not to be identified. "The real problem is that there is no error reported to the end user. The behavior of the system is the same whether you have run across the bug or not. The only the way to trust the output is to run your program on another system without the bug," he explained.

By early last week, the growing frenzy over the flaw and Intel's prior knowledge of it had forced Chairman and Chief Executive Officer Andrew Grove to issue a muted — and criticized — apology over the Internet.

"It's been blown way out of proportion for a bug that affects possibly one-tenth of 1% of all Intel customers," said Dean McCarron, an analyst at market research firm Mercury Research, Inc. in Scottsdale, Ariz.

Reports surfaced last week of a flaw in Intel's new 100-MHz Pentium that apparently slows the processor down in certain multiprocessing environments when running under Windows NT or Unix. Intel had previously informed vendors of the problem and is now sampling bug-free versions of the chip, which should be available Jan. 1, a spokeswoman said.

Dividing certain numbers triggers the flaw. The bug in the floating-point operations makes the chip "yield imprecise results ranging from the fourth to the 19th significant digit" when dividing specific numbers, said Vinod Dham, Intel's general manager for Pentium processors.

This is most likely to affect scientists and engineers who use Pentium-based machines for heavy-duty numerical applications, theoretical mathematics and compute-intensive modeling applications.

The flaw became public several weeks ago when Thomas R. Nicely, a mathematician at Lynchburg College in Virginia doing theoretical mathematical analysis, saw an error at the ninth decimal place. Intel acknowledged it had discovered the flaw several months ago and that it was investigating its cause when Nicely made it public.

Since then, Intel has maintained that except for rare combinations of numbers, the chance of a Pentium user randomly triggering the problem during routine use is one in 9 billion.

The flaw can be triggered easily. For instance, to generate an inaccurate result, all a user has to do is divide certain specific sets of numbers (see story top right).

In fact, even as Intel desperately tried to minimize the perceived effects of the flaw, intrepid Internet users demonstrated how the frequency of the flaw and its effects could be magnified several times given the right set of numbers. In some cases, users showed how instead of returning 0 as the correct result, the Pentium computed 256.

However, despite the apparent ease with which the flaw can be triggered, last week *Computerworld* could find no one whom the bug had actually tripped up. According to Intel, that is because the flaw occurs only with specific numbers.

Almost all commercial PC applications running under DOS, Windows and OS/2, including basic spreadsheets, accounting applications, server and transaction-processing environments, will not be affected, Intel said.

INTERNET VOICES

"If Intel responds appropriately, everything will be fine; otherwise I will be forced to recommend that all Pentium-based systems used by my group and associates be removed from service and not be used for anything more than expensive terminals."

John Burton, associate
G & A Technical Software, Inc., Hampton, Va.

"Intel should replace anyone's chip that wants a new chip. The folks paid for an IEEE floating-point unit, and the current Pentium does not meet that specification. Intel has no right telling me or anyone else what I need. It's my money, not theirs. I buy what I want."

Internet user

"If [Intel] wants their chips to be used in critical applications (as they obviously do), they have a responsibility to notify users when problems like these are discovered – and take their lumps if necessary. It's a responsibility that the manufacturers simply must assume voluntarily. If they don't, legislation should be enacted that requires it – as was done with the auto manufacturers."

Rolfe Tessem, senior vice president
Lucky Duck Productions, New York

"There is an incidental issue of all the users who've done the types of calculations (scientific and engineering) ... being ready to storm Intel HQ for the six months of work they'll have to recheck because the bug wasn't reported, not to mention the 18 months before that."

Irate user on the Internet

Messaging vendors move to hold user interest

By Suruchi Mohan
BOSTON

The Big 3 in LAN messaging lifted the veil on some middling pricing moves and third-party deals at last week's E-Mail World trade show here.

Massive interest in on-line services and messaging may have spurred announcements from Microsoft Corp. and Novell, Inc., which are seeking partnerships to strengthen their product offerings.

Lotus Development Corp., meanwhile, said it will allow users of other products to trade in their licenses for Lotus CC:Mail seats. The trade-in policy allows customers with Microsoft's Mail and Message Handling Service (MHS)-based mail licenses to switch to CC:Mail for $28 per license. This represents a 50% discount over the regular license fee of $56, Lotus said.

Microsoft, for its part, is trying to "shore up areas of weakness" by entering partnerships, said Nina Burns, president of Creative Networks in Palo Alto, Calif. For example, she said, Microsoft's development and distribution agreement with WorldTalk Corp. in Los Gatos, Calif., to deliver the Internet Connector for Microsoft Exchange Server is an attempt to plug the holes in its Simple Mail Transfer Protocol (SMTP) strategy. Microsoft had said it would support SMTP natively but is now supporting it through a third party.

The Internet Connector will become a component of the Exchange Server. It will support SMTP/Multipurpose Internet Mail Extensions (MIME), which allow users to send attachments such as binary files and video and audio clips over the internet. Also, because of a tunneling feature that enables a Microsoft Mail message to be encapsulated within MIME, Mail users will be able to exchange messages over the Internet without translation software. Companies will be able to use the internet as a backbone, which would help network administrators by eliminating the need to set up and administer gateways to the Internet.

Forum appeal growing

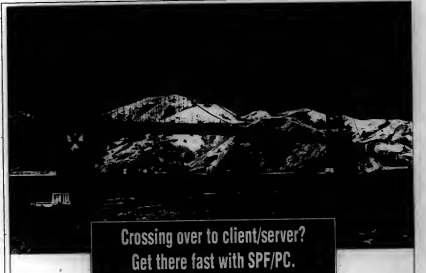
SMTP support is not the only area for which Microsoft is looking to third parties. Discussion databases are becoming increasingly popular, and Microsoft has announced it will sell Conference+ from Mesa Group, Inc. in Newton, Mass., with Microsoft Mail.

Novell, meanwhile, signed a partnership and distribution agreement with Collabra Software in Mountain View, Calif., to develop a version of the Collabra Share electronic discussion forum that will be integrated with GroupWise.

Users have been asking for electronic discussion forums to share and track information, according to Burns. "It is a natural add-on to E-mail. There is a tight coupling between interfaces so users can go into a discussion forum easily through the interface they're used to," she said. It is like Notes, only simpler, Burns added.

Integration seemed to be the main thrust of Novell's strategy as it tried once again to reassure its developers that it will not dump MHS in favor of the transport it inherited from the former WordPerfect Corp. Instead, Novell will "converge" GroupWise — formerly WordPerfect Office — "with NetWare MHS technology into a common engine," said Mark Ryan, product line manager at Novell in San Jose, Calif.

MHS will be an integral part of Directory Services in NetWare 4.1, expected to ship this month. Longer term, Novell will provide the Collaborative Message Server to integrate the messaging infrastructure of NetWare 4 with the messaging engine and message store of GroupWise. This was designed to offer MHS developers a smooth migration path, Novell said.



CA to Cobol programmers: Get visual

CA-Visual Realia ties to relational databases

By Thomas Hoffman

Last week, Computer Associates International, Inc. ushered in an alternative method for shops that want to modernize their legacy applications: CA-Visual Realia, a graphical user interface (GUI) client/server development tool for Cobol shops.

Organizations trying to reconfigure or re-engineer legacy applications for client/server architectures have had a limited number of choices. They have had to retrain their programmers to learn a new language such as Powersoft Corp.'s PowerBuilder or Microsoft Corp.'s Visual Basic and rewrite code from scratch. Or they could use Micro Focus, Inc.'s Cobol development tools.

Works in Windows

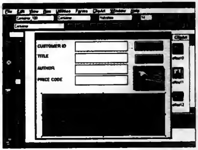
CA's latest development environment, which supports Windows 3.1 and is priced competitively with Micro Focus at $2,500 per copy, is expected to be a boon for companies that want to leverage their programmers' expertise in Cobol.

"It's insane to go out and try and rebuild the pyramid," said Kevin Schick, research director for application development and management strategies at Gartner Group, Inc. in Stamford, Conn. "I don't mean to degrade tools like PowerBuilder — we endorse a multiple tools strategy — but this is about maximizing returns on investments" in existing Cobol applications, he said.

Schick said he considers Micro Focus and CA-Visual Realia to be comparable environments with subtle differences. While Micro Focus seems to have an edge on compiler technologies, CA-Visual Realia "gives you more bells and whistles that are bundled in at no additional costs," he said.

For instance, CA-Visual Realia is bundled with a Watcom International Corp. database that supports CA-Ingres as well as Sybase, Inc., Oracle Corp. and Informix Software, Inc. relational databases at no additional charge. With Micro Focus, "users will tend to pay for a lot of those extras," Schick added.

Marc Sokol, CA's vice president of product strategy, estimated that CA-Visual Realia will enable organizations to take existing Cobol applications and rewrite them for client/server using 20% of the resources necessary to generate code from scratch.



CA says CA-Visual Realia *will let programmers rewrite Cobol applications for client/server using 20% of the resources necessary to generate code from scratch*

That message has not been lost on early CA-Visual Realia beta users. For example, ACC Orlando, Inc., a Sanford, Fla., software developer for the title insurance industry, decided earlier this year that it would have to reformat its DOS-based applications for Windows in order to meet growing market demand for the Microsoft GUI environment.

Although the developer dabbled with other languages, such as C, Visual Basic and PowerBuilder, "there's so much code to be rewritten that it would have taken many, many months to reconfigure the code into another language," said Arthur Haynes, vice president of product development at ACC Orlando.

Unwilling to switch

Still, CA may be hard-pressed to make converts out of those PowerBuilder and Visual Basic shops that have already made substantial commitments.

"We can often use some of the business logic in Cobol as a guideline, but [CA-Visual Realia] is not the kind of thing that we'd look at," said Britt Mayo, director of information technology at Pennzoil Co. in Houston, a large PowerBuilder shop. "By the time we get to the client/server environment, the business rules [for using Cobol] have changed."

Warehousing

CONTINUED FROM PAGE 1

While upper management liked the warehouse idea, the company did not make the funds available for it.

The high costs are in part because warehousing — which calls for moving data from production databases, putting it in a usable format and storing it in an end-user database — can be a very complex undertaking. But it is also the result of a relatively young market in which pricing has not shaken out yet.

The problem for many information systems staffs is that while they can easily sell the concept of warehousing, they often cannot afford to spend the kind of money required to do it.

Hence many users are looking for shortcuts.

"I thought I needed a tool to populate a warehouse, and I found that I don't need it," said Mark Factor, vice president of IS at Au Bon Pain, Inc. in Boston. "It was like a lightbulb going off. The reality is we could do [warehousing] by putting the data in another section of our database."

Vanstar's Terry Thornton *says his company installed a data warehouse for far less than $500,000*

No consultants

Factor is not alone; other users are coming up with cost-cutting measures of their own. For example, several users contacted last week said they avoid consulting services, particularly those designed to give users so-called "proof of concept." This involves building a prototype warehouse to prove it is a viable idea. Some users are finding they can easily handle this task themselves.

"A consulting group can burn a bunch of time just getting up to speed on how your business works, and you already know that," said Terry Thornton, director of financial IS at Vanstar Corp. in Pleasanton, Calif. He said his company completed a data warehouse for a "much lower" cost than $500,000, which is a typical warehouse price tag, according to some analysts.

Users also recommend handling data extraction and cleanup internally instead of spending $100,000 to $250,000 for a tool to do the jobs. Data extraction and cleanup are key steps used to pull data from production systems and scrub it clean by eliminating redundancies, errors and meaningless data before putting it in the end-user database.

Users said this function can be handled internally by writing code to extract and review data as long as a shop has the database know-how and does not have too complex a warehouse in mind.

The catch is to determine when a project is too big to handle manually. One rule is that projects involving more than 10G bytes of data "can get very complicated," according to Meta Group.

People power

"We aren't using those products here," said Robert Chin, chief information officer at HealthSource, Inc. in Hookset, N.H. His company built an enterprisewide data warehouse, which included the Red Brick Systems warehouse platform, for $750,000. While not dirt cheap, that is considered a reasonable price for a companywide installation. "The bulk of the work" to clean up production data for end users has "to be done by humans anyway," he said.

Another money-saving approach is to do warehousing in small, incremental steps instead of shooting for a full-scale, companywide project. For example, Robert Typanski, manager of data management at Miles, Inc. in Pittsburgh, said he kept costs below $1 million during nearly four years of warehousing by deploying the project in small chunks. Typanski said a small warehouse server with 5G bytes of data supporting 100 users would cost about $50,000.

Sybase weighs in

Last week, Sybase, Inc. stepped into the increasingly crowded data warehousing market by announcing a query optimization package intended to strengthen its SQL Server as a warehouse option.

IQ Accelerator will cost about $25,000, according to company officials, who said final pricing will not be set until general availability next year. The product uses indexing technology that boosts query performance and will deliver performance improvements over a standard relational database, the company said.

The optimizer is an effort by Sybase and Expressway Technologies, which Sybase acquired in October.

IQ Accelerator is a component of an overall warehouse strategy announced last week as a framework for client/server data warehousing. — *Rosemary Cafasso*

Sticker shock

The following is a small sample of warehousing costs:

- Proof of concept consulting service from **Software AG of North America, Inc.:** $10,000 to $100,000.
- Full warehousing package, including consulting services, from **Hewlett-Packard Co.:** $150,000 to $400,000.
- Warehouse management tools from **Prism Solutions, Inc.:** $125,000 to $250,000, depending on size of warehouse.
- Warehouse extraction, scrubbing tools from **Carleton Corp.:** $100,000.
- High-performance query optimization from **Sybase, Inc.:** $25,000.

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Mobile users wade through flood of products

By Michael Fitzgerald
BOSTON

The raft of announcements unleashed at last week's tandem expos — Mobile World and the Sales Force Automation Conference — may make life a bit more difficult for users already facing a slew of choices.

"We're going through a tremendous maze of products right now," said James J. Weglarz, Eastern area manager at SmithKline Diagnostics, Inc. in Bayshore, N.Y. Weglarz said his company wants to find an off-the-shelf sales force automation package that can be customized.

Analysts said these types of customizable, off-the-shelf packages are becoming more prevalent as sales force automation and other mobile vendors move their DOS applications to Windows.

Customization is a "solid trend, with vendors transitioning to client/server architecture in the Windows environment," said Ken Dulaney, an analyst at Gartner Group, Inc. in Santa Clara, Calif. In moving their stand-alone DOS applications to Windows, many vendors have also designed the packages to run more effectively in a distributed environment. At the same time, they are using standard Windows development tools instead of their own proprietary tools, freeing users from the whims of vendors' internal update schedules.

Indeed, many of the announcements at the Sales Force Automation show involved new Windows products or updates to existing Windows products.

Saratoga Systems, Inc. in Campbell, Calif., released SPS 3.4 for Windows. SPS 3.4 adds support for IBM's DB2 and DB2/2 as well as Oracle Corp.'s relational database. The SPS release also sports interfaces to Microsoft Corp.'s Mail and Lotus Development Corp.'s CC:Mail.

IBM and Aurum Software, Inc. in Santa Clara, Calif., released their joint collaboration, SalesTrak 5.1 for Windows. It allows real-time data synchronizing and features a user interface designed by game programmers. The product costs $1,595 per license.

Small potatoes

Even the largest players in the sales force automation field are small fries overall. Analysts project that Xcellenet, a more visible player in the mobile software market, will sell less than $30 million in product this year.

Nomadic Systems, Inc., a Parsippany, N.J., start-up, released Account Manager, a Windows product targeted at pharmaceutical companies. Account Manager includes a calendar planner, client profiler, list viewer and query manager.

Change is good

One major announcement at Mobile World had little to do with Windows. Xcellenet, Inc. released RemoteWare 2.0, a substantial upgrade to its remote management and synchronization tool. It also overhauled its multimodule product into a 32-bit application, built in object technology and added support for multiple protocols and a number of databases.

"In 2.0, [Xcellenet] did a lot of things I wanted," said Dean T. Thompson, retail systems manager at BP Oil, Inc. in Cleveland. BP Oil has 1,000 nodes up and running with Xcellenet. The company plans to increase that to 1,725, in part because Xcellenet also doubled the number of users it supports per server to 32. RemoteWare 2.0 costs between $131 and $787 per user, depending on configuration.

Other mobile-oriented announcements at the shows include the following:

- Gateway 2000, Inc. released Liberty, a 4.2-pound notebook with a 10.4-in. color screen and built-in infrared communications. It costs between $2,799 and $4,799, depending on configuration.
- UK chip designer Symbionics Networks Ltd. said it will work with Oki Electric Industry Co. to design a chip that brings wireless LAN capabilities to PC Card form factors and costs about $250.

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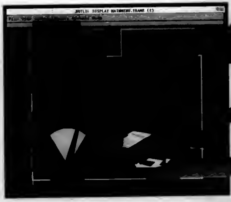

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Digital seeks to emulate HP's printer success

By Mary Brandel

In the crazy world of client/server systems, it is easy to overlook the changes inflicted on the lowly printer.

But Maynard, Mass.-based Digital Equipment Corp. has not. In fact, it wants to profit from these changes — even to the extent that the king of printers, Hewlett-Packard Co., has succeeded in this rather mundane market.

"It's not a matter of taking on HP head-on," said Jeb Hurley, director of business and marketing operations at Digital's printer unit. He noted that while Digital is focusing on workgroup and retail offerings — HP's stronghold — the company is also working to produce enterprise-oriented printers that work across several different networks.

"A key strength is their ability to put printing in the network environment," said Angele Boyd-Meyers, an analyst at International Data Corp. In that regard, "Digital is a fairly hidden secret."

"Whether you're printing from HP, IBM or Digital environments, their printers are compatible with different protocols," said Tim Wagner, site coordinator at Johnson & Johnson Pharmaceutical Research Institute in Spring House, Pa. Plus, Digital's service people are able to support multiple printer brands, he said.

Even so, Hurley conceded that Digital needs to produce machines that are less Digital-centric and easier to use. The PrintServer 17, for instance, works in Novell, Inc.'s NetWare and a variety of Unix environments but requires a network administrator to boot it up each day.

These simpler heterogeneous printers will not be available for six to 12 months, he said.

And while Digital expects high margins in the network printer arena, it expects more volume and revenue from retail sales.

Think again

You might think Digital would have dropped printers as a core competency, considering it sold off its relational database and disk drive business. But "the printers group generated lots of profit" last year for Digital, said Jeb Hurley, director of business and marketing operations.

"They have a shot," said John McIntyre, an analyst at BIS Strategic Decisions in Norwell, Mass. Even though Digital is late to the game, "they've been aggressive about bringing in non-Digital people and aggressive in getting shelf space," he said.

Hurley said the company so far has signed on with 1,400 retail stores, including Sears, Roebuck and Co., Circuit City and Lechmere.

"Big vendors usually have more like 3,000 to 3,500," Boyd-Meyers said. "So if they want to compete with the big boys, they'll have to double that."

Brand awareness is key in retail, analysts said. In this regard, Digital's printers will likely attract "the more industry-savvy buyer," McIntyre said.

Competitive offerings

So far this year, Digital has introduced some competitive machines that appeal to personal and workgroup users, including the following:

- The DECwriter 90IP, a 2.4-pound portable ink-jet printer.
- The DECcolorwriter 120IC and DECwriter 110I, retail ink-jet printers.
- The DEClaser 3500, a 12 page/min. workgroup printer with International fax and support for TCP/IP, NetWare, Ethertalk and Macintosh.

To excel in the printing arena, Digital must make some changes, observers said. This includes a new attitude toward price. "We can't just produce well-engineered products anymore," Hurley said.

Keeping costs down may be difficult because Digital does not manufacture its own engines. "That could be a distinct disadvantage," Boyd-Meyers said. "HP has that too, but they've got incredible strength in marketing and channels, and Digital is just now developing that."

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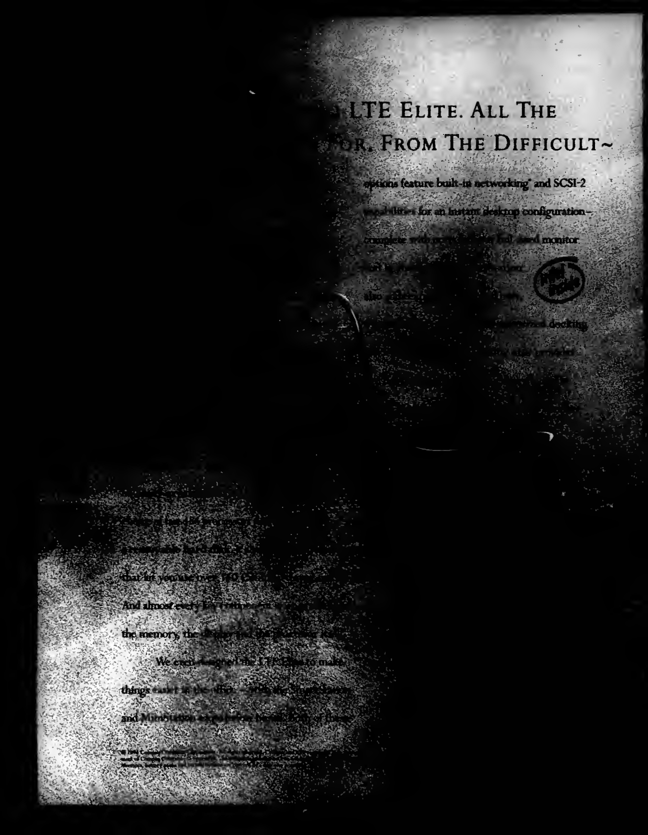

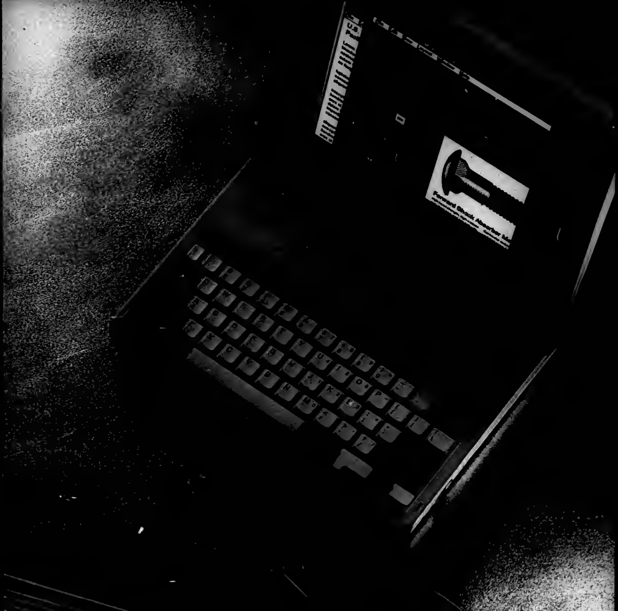

T3Plus Networking introduces Command Management System

By Steve Moore

As users migrate their voice and data networks from tried-and-true T1 and T3 technology to the newer and faster Asynchronous Transfer Mode (ATM) transmission scheme, they face an interim period during which their networks must support both T1/T3 and ATM.

With this in mind, vendors such as T3Plus Networking, Inc., Network Equipment Technologies, Inc., Ascom Timeplex, Inc. and AT&T Corp. continue to enhance their T1 and T3 products even as they work behind the scenes to prepare for ATM.

For example, T3Plus last week introduced its Command Management System (CMS), which is suited for users with point-to-point or point-to-multipoint T1 or T3 networks spanning fewer than 10 nodes. CMS gives users an alternative to T3Plus' high-end BMXview network management system.

"Our technical staff evaluated the Command Management System and was impressed by its flexibility in supporting fault and configuration management," said Micah Bailey, a manager in the information technologies division at Southern California Edison in Rosemead. Bailey added that as the utility migrates its network toward ATM technology during the next few years, "we will use [T3Plus] products in conjunction with ATM."

Users' choice

With its scaled-down management software, T3Plus is also responding to users who are "rejecting big, integrated management strategies in favor of affordable products that handle basic fault and configuration management," according to Tom Nolle, president of CIMI Corp. in Voorhees, N.J.

"There are only about 5,000 to 6,000 public and private T3 circuits in use by U.S. companies, and the average user of a T3 connection has only three sites," he added.

CMS can discover and collect alarms from all nodes in T1 and T3 networks. Configuration is not automated and is accomplished on a node-by-node basis, said Paul Zalloua, product marketing manager at T3Plus. CMS software is available now and is priced at $4,000.

T3Plus management options

PRODUCT NAME:	BMXview	Command Management System
TOPOLOGY:	Mesh	Point-to-point or point-to-multipoint
PLATFORM:	Unix	DOS
TYPICAL CONFIGURATION:	5 to 36 nodes	2 to 7 nodes
PRICE:	$25,000 (software and Sun SPARCstation)	$4,000 (software only)

3Com unveils series of LAN switching hubs

By Stephen P. Klett Jr.

As part of its switching road map, 3Com Corp. this week will unveil a LAN switch said to provide a more cost-effective alternative to high-end routers for collapsed backbone applications.

A collapsed backbone network architecture is built around a centrally located high-end router that acts like a traffic cop at an intersection, distributing data to and from other networks.

The LANplex 2000 series of switching hubs offers a packet-forwarding rate of 565,000 packets per second at an entry price of less than $10,000. There are two models in the series, the 2500 and 2016, and they are slated for delivery in the first quarter of next year.

Each box has 16 Ethernet ports and supports hot-swappable port modules and redundant power supplies. Also, the 2500 offers two Fiber Distributed Data Interface (FDDI) uplinks for high-speed connections to servers and supports the Routing Information Protocol.

"The 2500 is a positive step forward in terms of providing a cost-performance benefit over backbone routers that appears to be at least on the order of 5 to 1," said John Moreney, a principal analyst at Strategic Networks Consulting, Inc. in Rockland, Mass. In general, a router is better for security and processing multiple protocols, while switches are less expensive and generally faster.

Moreney said the 2500's packet-forwarding capabilities will allow customers to use it for applications typically reserved for high-end routers such as Cisco Systems, Inc.'s 7000 and Wellfleet Communications, Inc.'s Backbone Concentrator Node, which cost roughly $35,000.

"We're hitting some congestion problems in some of our servers, and it sounds like the 2500 may be an ideal and relatively inexpensive way to solve that problem," said a network manager at an East Coast bank who asked not to be named. "It also appears to have the potential to take the place of routers in our network in certain instances as well."

On the agenda

The 2500 and 2016 are the first in a series of switching products 3Com plans to roll out during the next 18 months. The following are also scheduled to be released next year:

- A LinkSwitch Ethernet switch for departmental and workgroup applications in both 10M bit/sec. and 10/100M bit/sec. models.
- Cellplex 1200 and 2000 Asynchronous Transfer Mode (ATM) switches for data center applications.
- 100Base-T and ATM interfaces for the LANplex 2500.
- Ethernet, FDDI, 100M bit/sec. Ethernet switching and an ATM interface for the LANplex 6000 enterprise hub.

Token Ring-to-ATM and FDDI switching for the LinkSwitch are planned for the first half of 1996.

Analysts said these products will give 3Com a jump among major internetworking vendors in terms of offering customers the broadest range of switching products possible. However, competition in this market is fierce and nearly every vendor is scrambling to deliver switching products during the next year or so.

Vendors team to resolve support puzzles

By Jaikumar Vijayan

As users continue to roll applications off their mainframes and into distributed, heterogeneous hardware environments, several desktop vendors and service providers are banding together in an attempt to provide multivendor customer support.

Last month, for example, Dell Computer Corp., Novell, Inc., Keane, Inc. and SAP AG of Germany became the latest members to join the Customer Support Consortium. A multivendor organization established in 1992 by such industry heavyweights as IBM, Digital Equipment Corp., Intel Corp. and Hewlett-Packard Co. as well as 21 other companies, the consortium is developing a model called Solution-Centered Support (SCS) to enable its members to support multivendor hardware and software environments.

Keeping up

"Vendors increasingly are finding it hard to stay ahead of the customer-support curve" in such environments, said Shelley Benton, director of the consortium.

"There has been an increase in call volume, an increase in the complexity of the product support required, and there is this whole multivendor thing" that members of the consortium are trying to work out, she added.

"We have just rolled a large system off the mainframe, and the learning curve so far has been tremendous," admitted John Smith, manager of end-user computing at Kennametal, Inc., a manufacturer of carbide cutting tools in Latrobe, Pa.

The company, which is attempting a worldwide shift to client/server computing, is looking for vendors that can provide global multivendor support.

"There are a whole lot of issues involved as you move into distributed computing — communications issues, security issues, where to place the data, how to retrain programmers," all of which require support, Smith said.

According to a recent study on the independent/multivendor services marketplace by Dataquest, Inc. in San Jose, Calif., systems vendors are increasingly beginning to revitalize their traditional service businesses and are jumping on the multivendor services bandwagon. While much of the activity still revolves around hardware maintenance services, customers are now asking for value-added services that extend beyond just hardware and software support, the report said.

Toward that end, the consortium is trying to pool information and customer-support techniques from different vendors in an effort to build the SCS model.

For instance, consortium managing member Symbolic Corp. recently demonstrated a software technology, code-named Resolve, that will allow group members to capture, store and reuse the information used to resolve a particular customer-support problem. That information can then be used by customer-support departments to build databases that consortium members can share.

Multivendor services

Key findings regarding the multivendor services market from a Dataquest study earlier this year include the following:

- Independent/multivendor services are in transition as providers evolve strategies and offerings to meet changing market demands.
- Much of the multivendor services activity is based on hardware maintenance even though users are asking for more.
- The majority of multivendor sites currently contract with an independent/multivendor service provider.

Briefs

Ups, downs at Lotus
Rumors that Oracle Corp. might be among the contenders interested in buying Lotus Development Corp. sent Lotus' stock shooting up 7% last week; neither firm would comment. Separately, Lotus is claiming victory in an age-bias case despite a $275,000 court award to a former employee for wrongful dismissal.

SVG, Canon off
Silicon Valley Group, Inc. (SVG) and Japan's Canon, Inc. have called off a deal to allow Canon to jointly make SVG's Micrascan and lithography system and sell it in Asian markets.

Foiled again
The Software Publisher's Association last week announced settlements totaling $450,000 against two companies for pirating software from more than 50 group members.

DSP income, sales up
DSP Technology, Inc. reported net income of $290,000 for the third quarter ended Oct.31, up 254% from the same period last year. The company posted net sales of $3.5 million, up 54% from the third quarter last year.

SHORT TAKES Corporate Software, Inc. has received government approval to buy 800-Software, Inc. . . . Thomas Vanderslice will become president and chief executive officer of M/A-COM, Inc. following Allan Rayfield's resignation. . . . Andyne Computing Ltd. launched an initial public offering of its stock on NASDAQ. . . . Asante Technologies, Inc. has settled SynOptics Communications, Inc.'s patent and copyright violations suit. . . . AT&T Global Information Solutions sold its specialty printer business to Axiohm IPB. . . . KnowledgeWare, Inc. stockholders have approved its acquisition by Sterling Software, Inc.

Marketing strategies

IBM works to drop big iron look

Client/server unit needs to sharpen user awareness

By Craig Stedman

Two years after it was formed and 12 months after its management was shaken up, IBM's Worldwide Client/Server Computing Group gets a C on its report card from analysts. Its attempts to improve IBM's standing in the client/server world rate high marks for effort, but more needs to be done to earn a higher grade.

IBM's Martin Clague *says he 'is more interested in the hearts and minds of customers than revenue'*

To push that grade up, observers said IBM must do a better job marketing its client/server efforts outside of its traditional data center customer core and focus more on reaching department-level managers and small businesses.

Quantitative measurements of the client/server group's performance are hard to come by because its main role is to provide marketing and technology support to IBM's product and sales units rather than to generate revenue.

Analysts said the client/server group has helped IBM shuck some of its mainframe-centric image, at least with large IBM-friendly shops. It also gets kudos for shepherding IBM's Open Blueprint, a set of distributed computing specifications released last spring, and for creating a client/server advisory system for IBM's sales force. In addition, the client/server group had a role in developing an upcoming systems management suite, code-named Karat, that will combine IBM and non-IBM products in pretested packages.

"They've been working very hard at it and are better off than they were a year ago," said Amy Wohl, editor of the "Trends-Letter" newsletter in Narberth, Pa. But she added that customers "still don't automatically look at IBM as a vendor that they have to consider for client/server buys."

The lack of recognition increases outside of big iron data centers, and a key task for the client/server group is to get IBM in position to round up more than the usual suspects, analysts said. "They've got a bit of market awareness at this point, but I'm not so sure that a department manager or a small business owner would know that," Wohl said.

"It's hard for me to say that it has been a bang-up success," agreed Peter Burris, an analyst at International Data Corp. in Framingham, Mass. "The ultimate test is whether in a couple of years things like mainframes and the AS/400 will be readily accepted as participants in the client/server market." IBM needs that to happen to turn those systems back into growth platforms, Burris added.

Keep in touch

The client/server group's only direct contact with the outside world comes through its involvement in IBM's open systems centers, which do prototyping, application development, network design and other work for customers.

MEMC Electronic Materials, Inc. in St. Peters, Mo., figures its time at the U.S. open systems center in Dallas shaved six months off the conversion of its mainframe-based order and production management system to the RS/6000, said Ed Wehner, manager of business information systems at the maker of silicon wafers.

"We did most of the real work ourselves, but having a one-on-one relationship made it easier to resolve problems," Wehner said. "We had the experts right there, and they had a direct pipeline into the development lab." MEMC "got our money's worth" for the $35,000 in fees it paid IBM over three months, he added.

IBM officials said the Dallas facility and eight satellite sites in the U.S. led to $200 million in product and service revenue in the first half of this year. Through September, meanwhile, the company counted about 1,800 customer "engagements" at the 50 open systems centers it operates worldwide.

Breaking 1,000

IBM's Client/Server Advisor System has templates documenting more than 100 real-world client/server installations, some with customer names attached. Martin Clague, general manager of IBM's Worldwide Client/Server Computing Group, said he hopes to increase that number to 1,000.

That number sounds impressive, Wohl said, but it is hard to tell how meaningful it is because the engagements "could be anything from a day to six months."

Martin Clague, general manager of the client/server group, conceded that it still has to do better, especially at the departmental level.

"It blows my mind that some vendors are perceived to be more advanced than we are [when they] only have piece parts of the whole equation," Clague said. One of the Top 3 priorities for next year is to continue to work on bulking up IBM's image with customers, he added.

Broadband PCS licenses go on the block

By Michael Fitzgerald

Let the drooling stop and the bidding begin.

Today the Federal Communications Commission will kick off its auction for broadband personal communications services (PCS) licenses. The much-awaited licenses, covering 51 regions of the country, are expected to net several billion dollars for the U.S. Treasury when the bidding is complete, probably by early next year.

In many cases, vendors want the licenses in order to help them flesh out their cellular networks. Groups such as the Bell Atlantic Corp./Nynex Corp./US West, Inc./AirTouch Communications, Inc. partnership need licenses in specific areas to develop a stand-alone nationwide wireless network for voice and data.

A full 80% of the U.S. population is interested in wireless services offered by PCS networks, according to a study by BIS Strategic Decisions. Home users are more interested than work users, with 34% saying they would like wireless for home use only and another 20% saying they would like it for both home and mobile coverage.

Currently, rival cellular carriers switch calls among themselves when their users travel, or roam, outside the home carrier's region.

Price uncertainty

PCS, which some have called "Poor man's Cellular Service," was created by the U.S. government to give consumers lower pricing on the wireless voice and data spectrum. Because narrowband auctions drew much higher bids than expected, some fear that a feeding frenzy over licenses will make this goal economically impossible for license winners.

"The demographics of building out that technology could literally mean that prices will not drop," said Tim Bajarin, president of Creative Strategies Research International, Inc., a market consultancy in San Jose, Calif.

Gen. George A. Custer. The original lone ranger (1839-1876)

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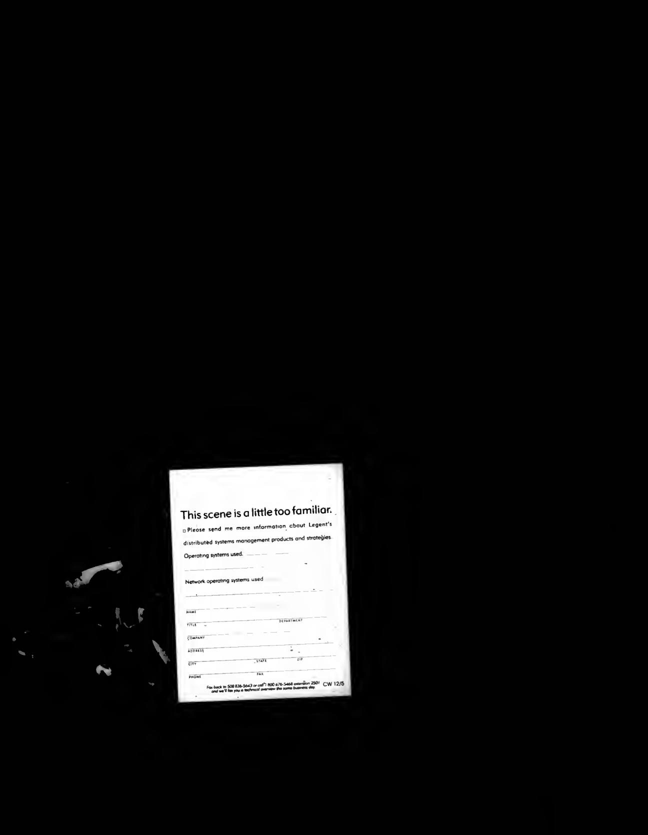

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Unsafe at any speed

In a current advertisement, Intel CEO Andrew Grove says, "There are two kinds of companies: the quick and the dead."

I wonder why the company didn't heed its chairman's advice as it stumbled toward one of the bigger public relations gaffes in this industry?

Intel has allowed the sale of some 2 million flawed Pentium processors despite the fact that it knew of the problem months ago. In fact, Intel is still selling them, although you don't have to buy computers that have them if you don't want to.

If you own Pentium-based machines, Intel says, you have little or nothing to worry about because the flaw will produce an error only once every 9 billion math operations or so. But some of the chatter flaming over the Internet the past couple of weeks says otherwise; some writers suggest that certain conditions can produce a much higher incidence of error. The truth is, no one knows — not even Intel.

But in answer to "What did you know and when did you know it?" there is no lack of clarity. Intel knew there was a problem months ago and acted as if it hoped no one would find out. Once the cat was out of the bag — courtesy of a math professor and a trade publication that blew the whistle loudly — Intel's hubris-laden reaction was that it would replace bad processors only if individual users could prove that they "qualified" for replacement. In other words, you must prove you will work on applications that might be compromised by the flaw.

That's ridiculous. Who can say what applications a computer might tackle during its life span? If a buyer chooses Pentium, his applications will probably extend beyond word processing and electronic mail.

And what about liability? What if an application compromised by the faulty chip causes some financial or personal loss? If Intel knew it was selling faulty processors, might it be as liable as any other manufacturer that knowingly sells products that later produce a liability situation?

The company could have turned this into a positive experience by immediately falling on its sword (most people can sympathize with problems that could go wrong when you pack a million-plus circuits on an inch-square chip) and offering to replace what would likely have been very few chips for users who wanted to bother. But noooooooo.

Anyway, Intel is already paying plenty for its inaction. Rival chip makers said they stand ready to help beleaguered Pentium users. Pentium sales during this prime buying season could slacken. At press time, the stock market was exacting its own form of punishment on Intel. And finally, this situation stands as probably the biggest blot yet on Intel's reputation as a maker of the highest-quality components and a company that backs those products to the hilt.

On second thought, maybe there are *three* kinds of companies: the quick, the dead and the arrogant.

Bill Laberis

Bill Laberis, *Editor in Chief*
Internet: *blaberis@cw.com*

YOU, SIR, ARE IN BIG TROUBLE!!
$200 million Libel Lawsuit
PRODIGY

[redacted]

Automation

In "Renovate (Don't obliterate)" [CW, Nov. 7], Ron Berry lists five categories of tools that are of interest to organizations engaged in "renovation projects for legacy applications." Missing from the list is what our customers have found to be critical enabling technology for migrating legacy applications to open systems: automated software testing capability.

Automated testing solutions can help predict the performance of mission-critical applications when they are rehosted to Unix servers. For example, one of our customers in the managed health care business created a 5,000-user test bed using simulated users to make sure that a key software system would function under real-life conditions.

John J. Kiley
President
Performance Software
Newburyport, Mass.

Scaled down

"Memo's mainframe E-mail does Windows but misses on attachment feature" [CW, Oct. 24] is misleading on at least two counts.

The use of a 1-to-5 scale could mislead casual readers who compare Memo to LAN-based E-mail systems in the preceding article. Using the same scale (1-to-10) as in that article shows Memo to be rated significantly higher than the LAN-based market leaders.

Also, our location and phone number are listed incorrectly. The correct information is Verimation, Inc., Woodcliff Lake, N.J. (201) 391-2888.

Adam Sroczynski
President
Verimation, Inc.
Woodcliff Lake, N.J.

Long shot

It is easy to agree with Ben Rothke that MS-DOS is outdated ["Microsoft's operating system no longer on top," CW, Oct. 24]. But betting one's company on Linux 1.0, a Unix clone, is not as clever as the product might be. Good luck, Ben.

Paul-Andre Desjardins
Quebec

Quest for meaning

Too often, database designers worry only about storage and access without concern for the meaning behind the data ["What's the meaning of this?" CW, Oct. 17]. Computer professionals should realize that the field of epidemiology has been dealing with the meaning issue for a long time.

"Code creep" (how field names change over time so that the same data is coded differently), ascertainment bias, selection bias and other issues all have implications for drawing conclusions about business and hospital systems.

Let us hope that we do not have to reinvent their wheels but that we will use their insights and tools.

Henry P. Lehmann
Director, medical informatics
Johns Hopkins University
School of Medicine
Baltimore

Phone companies team against fraud

Local exchange carriers, regional Bell operating companies and interexchange carriers are teaming and actively fighting crimes in the area of toll fraud ["Toll fraud rings in high cost," CW, Oct. 10].

Ameritech recently signed a fraud sharing agreement with two major carriers to combat credit-card fraud and is part of two industrywide teams investigating ways to foil calling-card and call-forwarding abuses.

Early results of the teams are encouraging and include the Greensboro, N.C., grand jury indictments detailed in the story. Ameritech is also working to prevent the often overlooked area of subscription fraud, in which individuals use false or illegally obtained information to secure direct-dial telephone service.

Jerry Ostergaard
Manager,
Market communication
Ameritech Corp.
Hoffman Estates, Ill.

BEST COMPUTER NEWSPAPER
1992, 1993
COMPUTER PRESS ASSOCIATION

■ Computerworld welcomes comments from its readers. Letters may be edited and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

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Do Bill and Ted need an excellent standard?

Eric R. Singleton

So what the heck is wrong with Bill and Ted's excellent PCs anyway? Well nothing if you're renting a movie. But if you're trying to build a corporate LAN that is reliable, consistent and performs at an economical price, then you may have a problem.

One of the good things about mainframe computing was the broad-reaching consistency of standards. I could walk into a company that had thousands of identical terminals attached to a central machine and know exactly what everyone had access to. In the world of client/server computing, everything is potentially a little bit different on everyone's LAN. The desktop hardware might be based on Intel architecture but from different makers. My graphics package isn't the same as my neighbor's; I have to export to his format for him to edit my material. Take 10 variations in software multiply by 10 variations in hardware, and you have a hundred different scenarios to deal with.

This is not the way to run information systems. Paul Hoedeman, CIO of Allied Signal Aerospace, put it this way: "Standards in the corporate environment must avoid the inconsistencies found in the myriad of what I call Bill and Ted's excellent PCs — the all-this-and-more-for-$995 brands."

Software is no exception. To achieve consistency, reliability and performance, many organizations establishing standards opt for bundled desktop suite packages. Allied Signal started with Gartner Group's "tier-one" PCs (Compaq and IBM) as a baseline desktop hardware standard and Microsoft's Office product as a core business application suite on the PC. Establishing these two standards in the beginning allows us to further evolve our standards at all levels of the corporation.

One of the good things about mainframe computing was the broad-reaching consistency of standards.

The core product argument makes sense, but what about specialized niche products? There are many with great utility, but it is critical to choose products that conform to ever-changing de facto industry standards. We have been looking at object-oriented database products lately and reading the product literature is not enough. Calls to bleeding-edge users of specialized products reveal richer information about their characteristics, allowing us to choose the right product that dovetails with our vision.

Putting all of this in place is great, but getting it there can be yet another challenge. It can be easy if you're building a network from scratch. But if you are trying to introduce new standards to an existing client base, you may need the diplomatic skills of Kissinger and the patience of a saint. Where I worked previously, I once did something as simple as switching from one E-mail package to another, and although the new package was better (performance, features, interface — everything), I got more than one nasty look until everyone settled in with it.

Do you have a choice on standardization? Not really. If you want to grab economies of scale and recapture one of the better aspects of mainframe computing, establishing standards in this new distributed world is for you.

Singleton is director of information systems at Allied Signal Technical Services Corp in Columbia, Md.

Old rules apply in marketplace of the future

Patricia B. Seybold

Everyone's getting into the act — Microsoft, AT&T, Commercenet, Apple, America Online and so on —they're all vying to host electronic markets and promising to secure credit-card transactions and authentication services. You don't want your company to be left at the starting gate as more nimble competitors race toward the pot of gold in electronic commerce. But before you bet your company's future on one of these horses, you should realize there's more to creating a viable marketplace than secure transactions. Much more.

I envision electronic marketplaces being used first for lots of business-to-business transactions: Purchasing office furniture and software, booking travel, buying market research and consulting services, submitting requests for proposals and receiving proposals. And sure, we may also go on-line to order groceries, buy games for our kids and send flowers to our loved ones.

What makes a good marketplace? First, you need a critical mass of buyers and sellers. The marketplace you select should be *the* place customers go as a first resort to find the products and services they need. And in order to attract good customers, you'll need to have a lot of good, high-quality products to choose from at a variety of price points. Many early attempts at electronic markets have failed because these two basic conditions were not met.

Many early attempts at electronic markets have failed because two basic conditions were not met.

There are several more subtle ingredients as well. I learned most of these from the late Phil Salin, whose Amix in 1991 was the first electronic marketplace I encountered. Before launching their pioneering but probably premature offering, Phil and his colleagues carefully researched the role markets have played in economic systems.

The second essential ingredient in a viable marketplace is the opportunity for independent evaluations and for customer dialogue and discussion. Picture market day in a small town in southern France. Everyone comes to the market. Not only do they buy and sell essentials, they also compare notes on who has the best mushrooms and whose truffle prices are outrageous. And, of course, there are usually one or two shrewd buyers whose opinions and endorsements are sought by many. The ability for customers and critics to openly evaluate the wares offered is a fundamental principle of a viable marketplace.

The third important marketplace component is the ability for disgruntled buyers to seek recourse. A viable marketplace must have a recognized mechanism for resolving disputes among buyers and sellers. The Amix market included a provision for resolving disagreements. When you registered with the market, you agreed to submit to binding arbitration if that ever became necessary.

Fourth, no marketplace is complete if it doesn't support negotiation. Buyers and sellers need to be able to haggle over conditions of mutual satisfaction, including money, terms and conditions, delivery dates and evaluation criteria.

Finally, in a viable marketplace, customers can make requests for products and services not currently offered and have a reasonable expectation that someone will turn up with a proposed offering to meet that request. In short, an electronic marketplace is an interactive information service that supports the entire procurement process. Don't settle for less.

Seybold is president of Patricia Seybold Group in Boston. Her Notes address is Patricia Seybold@PSOCG. Her Internet address is PSeybold@PSGroup.com.

There are 7 crucial services your next network should perform.

(But try telling that to IBM and Microsoft)

Now that you're about to spend time and money on a next generation network, the last thing you want is a product that's not all there. Unfortunately, that's exactly what our competitors are trying to sell you. Because while your next network will need to perform way beyond file and print, those basics are all IBM and Microsoft can deliver today. And the truth is, even those aren't up to NetWare standards

NETWORK USERS. THE VOTE IS IN.

IDC Jan-June 1994 Server Network Operating Systems Node Shipments*
Novell: 72% / Banyan: 7% / Microsoft: 7% / IBM: 7% / DEC: 3% / Other: 4%

PROMISES ARE NICE BUT THEY CAN'T RUN A NEXT GENERATION NETWORK.

So what do the other guys deliver? Little more than a promise to provide you a full service network operating system somewhere down the road (the high-tech version of "the check is in the mail"). Or maybe they can point you to a third party vendor. But that's not enough to run the net-work you need today.

You see, while IBM and Microsoft are just beginning to offer basic file and print services, networking requirements have been cruising ahead. In fact, networking with 32-bit NetWare 4 today encompasses much more than just local workgroups and file and print, it's evolved to create a distributed network that speeds timely information directly to the people who need it. At the moment they need it most. That kind of feat demands a proven product, not just a promise. And right now Novell's NetWare 4 is the only one that can deliver.

WHY YOU NEED WHAT WE'VE GOT: THE MAGNIFICENT 7 EXPLAINED.

Networking today means being able to hook up with people and information anytime, anywhere with a single login. It means sales people on portable computers can let the home office know what's up with sales in Dubuque. In minutes instead of weeks. It means a key player on the road can keep collaborating with folks at home to get that business plan in the banker's hand tomorrow.

Working like this requires seven

Novell

crucial services from your network. One must is a directory service. No more looking for data in all the wrong places. Simply log in to the network once to get the info you need the moment you need it.

Built-in messaging lets you use most of the popular groupware packages such as E-mail, calendaring and others. Better yet, because it uses the same directory as the network operating system, you're blessed with a single-point-of-administration that saves time and money.

Multiprotocol routing with NetWare gives you software-based routing (no new hassles, no new hardware) for connecting your network with the rest of the world. That way, not only do you get the info you need anytime, anywhere, but you can collaborate with anyone, anywhere.

Network management with NetWare 4 lets you manage your entire network from a single-point-of-administration. And to make things even easier, our graphical MS Window's management utilities reduce repetitive, multistep tasks to a simple click of a mouse.

Security with NetWare 4 allows administrators to control access to sensitive information within a distributed environment. In fact, it was designed to meet the National Computer Security Center's Class C2 Network Security criteria. Your information can't get much safer than that.

And last but certainly not least, file and print—the services that started it all. Only NetWare 4 offers data migration, suballocation and compression so you won't have to buy extra hardware like the other vendors require. Simply put, our file and print services beat IBM and Microsoft cold on both performance and cost.

555 DAYS UP, 0 DAYS DOWN: ONLY NETWARE 4 IS ROCK SOLID TODAY.

Perhaps the nicest thing about NetWare 4 is that it doesn't just sound good, it works. And there's nothing like months of solid performance and happy users to prove it. Folks tell us NetWare 4 is a product they can count on today as well as tomorrow. Others report that it has given them stability and performance and has proven itself in business critical applications. But the comment we hear most is that, quite simply, NetWare 4 is doing everything they need it to do. And that's good enough for us.

NOVELL'S SUPPORT ENGINEERS OUTNUMBER MICROSOFT'S 50 TO 1. WHO WOULD YOU RATHER CALL FOR HELP?

Buy NetWare 4 and when you call for help you'll get answers, not a run-around. Only Novell has over 47,000 Certified Novell Engineers (and 60,000 more in training) working with 20,000 Novell authorized resellers. Not to mention a veritable arsenal of everything from technology and solution partners to systems consultants and integrators. The point is, we don't sell you the product and disappear.

NEXT GENERATION NETWORK SERVICES. *READY OR NOT!*

Services	Novell NetWare 4	Microsoft NT Server 3.5	IBM LAN Server 4.0
1 Directory	Yes	No	No
2 Integrated Messaging	Yes	No	No
3 Multiprotocol Routing	Yes	No	No
4 Network Management	Yes		
5 Security	Yes		
6 File	Yes	Yes	Yes
7 Print	Yes	Yes	Yes

NETWARE 4 ISN'T JUST EASY, IT'S VIRTUALLY RISK-FREE.

It's true. In fact, no other migration path is this easy and risk-free. On top of having the same basic architecture we've always had, NetWare 4 also features built-in migration tools so you can upgrade now. Backward compatibility to NetWare 3 means that applications written for NetWare 3 run on NetWare 4. And because you can manage NetWare 3 from a NetWare 4 server you can transition at your own pace. Installation is more hassle-free thanks to NetWare 4's simple install option. Even administration is a breeze because NetWare 4 lets you make all those routine, repetitive tasks in one intuitive step.

BUT WAIT, THERE'S MORE. HOW DOES A 300% RETURN ON INVESTMENT AND A FREE UPGRADE SOUND?

Fewer hassles mean fewer dollars. Research shows that approximately 70%** of the cost of a network is administering and managing the network and its applications. By simplifying the administrative load, NetWare 4 slashes the cost of administering your network by roughly 25%†. Customers who added these savings to those garnered by eliminating additional hardware expenses have reported up to a 300% return on their investment in NetWare 4. Better yet, if you buy 4.02 now we'll upgrade your network operating system free through March, 1995. What a deal.

THE TRUTH AND NOTHING BUT THE TRUTH. ALL IN A FREE BROCHURE.

We'll be the first to admit that this is a lot of information for one ad to carry. And believe us, it's not all we have to say on the subject. The way we stack up against the competition is impressive. The product we've built over the past 11 years is proven. And you can get the nitty gritty details on all of it by calling 1-800-554-4446 now.

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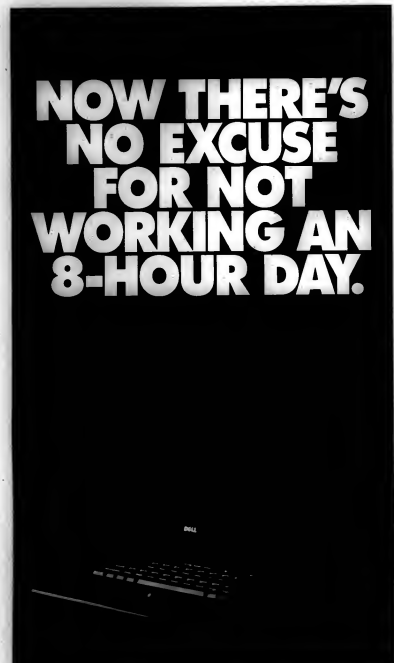
NetWare 4

The only network
ready for tomorrow, today.

*Source IDC - this information does not include Peer-to-Peer such as Personal NetWare, Windows for Workgroups, and LANtastic.
**Source: META Group. †Source: Gartner Group


NOW THERE'S NO EXCUSE FOR NOT WORKING AN 8-HOUR DAY.
DELL

Test-drive

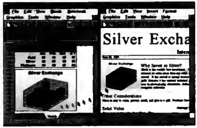
PerfectOffice 3.0 proves to be well worth the wait

By Howard Millman

WordPerfect/Novell, Inc.'s PerfectOffice 3.0 addresses the drawbacks of its predecessor, PerfectOffice, produced by WordPerfect and Borland Internatinnal, Inc. Instead of limited selection and marginally integrated applications, PerfectOffice 3.0 offers a fluidly integrated collection of robust applications.

We ran a beta release of PerfectOffice 3.0 through a succession of tests to assess its ease of use and suitability to a task. Aside from the isolated problems we expect in any early beta, there is a lot to like in this powerhouse product.

All of the applications present a uniform graphical interface with a consistent took to tool bars, pull-down menus and key dialog boxes. The applications share a spell checker, thesaurus, drawing module, grammar checker and file manager.



PerfectOffice 3.0 *uses OLE to link Quattro Pro and WordPerfect*

Helping the user

Interactive "coaches" and "experts" lead users through routine tasks. "Upgrade experts" help users of earlier releases or competitive products learn new keystrokes and commands.

PerfectOffice 3.0 employs Microsoft Corp.'s Object Linking and Embedding (OLE) 2.0 as the interapplication drag-and-drop data vehicle. In our tests, we successfully moved objects between WordPerfect 6.1 and Borland's Quattro Pro.

However, running a small DOS program in the background caused consistent out-of-memory errors. Errors persisted despite the use of a 66-MHz Intel Corp. i486DX2 test machine with 16M bytes of RAM. WordPerfect recommends 8M bytes of RAM for OLE 2.0 operations. Closing the DOS program eliminated the problem.

Editing an embedded OLE 2.0 object starts by double-clicking on the target object. In OLE 1.0, this action launched the source application, a time-consuming and not-always-successful event, especially if someone moved the source application from its original location on the hard drive. OLE 2.0, however, accelerates the edit because it uses only the source application's menus and tool bars, leaving the currently loaded application in control.

OLE 2.0 depends on PerfectOffice's Desktop Application Director to facilitate switching among applications. Similar to Microsoft's Office Manager, this customizable strip of pop-up mini-icons also provides fast access and switching among all PerfectOffice applications.

The product is available in three configurations. Standard Suite includes an upgrade to WordPerfect 6.1, Quattro Pro 6.0, Presentations 3.0, InfoCentral personal information manager 1.1, Envoy 1.0 file viewer and the GroupWise 4.1 electronic-mail, calendar and schedule application.

Standard Suite costs $259 for upgrades, $299 for competitive upgrades and $659 for retail buyers.

Professional Suite includes the preceding six applications, plus Borland's Paradox 5.0 and Novell's Visual AppBuilder 1.0.

Professional Suite costs $359 for upgrades, $399 for competitive upgrades and $859 for retail buyers.

In an innovative and possibly controversial variation on the suite marketing theme, WordPerfect will offer a Select Suite that enables users to select just the applications they want. Select Suite ships on a CD-ROM that contains all PerfectOffice applications as well as third-party applications and selections from WordPerfect's Main Street consumer line. Purchasers call an 800 number to unlock the ones they want.

PerfectOffice, *page 41*

McAfee opens doors on wide-area metering tool

By William Brandel

Wide-area metering products that will help users determine their software needs as well as manage their current software are now rolling out. But users say vendors must tackle a number of issues before they can achieve any of the hyped-up savings that vendors promise.

One new product is SiteMeter 5.0 from McAfee Associates, Inc. in Santa Clara, Calif. SiteMeter represents a new breed of wide-area metering products that will enable software management across the enterprise from one spot.

This approach is appealing to sites such as Household Credit Services, Inc. in Salinas, Calif. Household plans to use SiteMeter 5.0 to measure PC software use by its 4,000 end users nationwide, said Dale Gundersen, a communications analyst at the company. Gundersen said that because SiteMeter supports IP in addition to IPX on Novell, Inc.'s NetWare, he will be able to monitor simultaneously all of Household's PC software use.

One each

In a recent *Computerworld* survey, 54% of information systems managers said they purchase most of their application software licenses on a one-per-desktop basis.

Trying it out

Gundersen is beta-testing the product on two servers in Household's Salinas headquarters and said so far the product has exhibited all the capabilities expected for the two servers.

"If one server is not using the licenses and another needs them, we can just let the other server have [them]."

Dale Gundersen, Household Credit Services

But it is the enterprisewide capabilities that have users such as Gundersen excited about wide-area metering. By using local-area metering at its Salinas site, Household has already saved $60,000 in software licenses, Gundersen said.

"If one server is not using the licenses and another needs them, we can just let the other server have the licenses," Gundersen said. "And this is before we use it globally on a wide-area network."

The wide-area scope of metering to determine how much software is actually used appeals to users.

"Balancing license usage between servers has been an issue for users," said Ki Wilson, a senior microcomputer manager at Stone Container Corp. in Chicago. "I could see some savings from sharing licenses within the U.S. But I am not so sure this would work internationally across different time zones."

Wilson added that much guesswork and many intangibles must be addressed to achieve international license floating. Floating is when a license based on one server is "floated" to another to be used there.

Prominent among the issues that users will face in trying to float licenses is what kind of terms their license agreement ties them to. In other words, users may have to change their license terms when they renew to allow for floating. And with Microsoft Corp.'s Windows 95, the next version of Windows, and applications that run on it expected in 1995, it may be a good time for users to do that.

But Wilson said Windows 95 may cause users to spend more money, not less, on software licensing.

"When you consider that Windows 95 multitasks and that end users will be running different applications in different sessions at the same time, this does not free up those licenses to be [used] in the enterprise," Wilson said.

Usage hurdles

Most software usage today is restricted by the laws of where it was purchased. Moreover, Wilson said, it is not clear to him why German-language software would appeal to users in China, for example.

And there remains the practical matter of whether the technology works throughout the enterprise and across time zones.

"The technical problems are based on the existing infrastructure of networks," said Russell Frye, president of Frye Computing, Inc. in Boston, a maker of network management applications that include metering products. "Are these built to facilitate a real-time view of applications usage? Then there is the speed-of-light physics limitation. If I want an accurate account of how many simultaneous Lotus 1-2-3 users are on the network, I can't really do it."

Until the McAfee product begins production (it is slated to ship this week) it will be difficult to determine whether international metering and floating will work. Beta users contacted for this story have not set up the product on an international basis.

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New notebooks show promise

By Michael Fitzgerald

New notebooks trotted out at Comdex/Fall '94 will not hit the market for some time, but they show significant improvements over today's technology.

Texas Instruments, Inc. hopes to vault from its position as a high-end notebook maker to become the biggest seller of Pentium notebooks. At Comdex in Las Vegas, it showed the TravelMate 5000 notebook, which officials said will be released at the end of January. The 5000 uses Intel Corp.'s 50/75-MHz Pentium and the Peripheral Component Interconnect bus, runs on dual lithium ion batteries and has built-in serial infrared wireless communications.

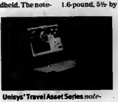
Standard features on the notebook include a 10.4-in. active-matrix screen and an 810M-byte hard drive with a variety of multimedia features. TI has not announced pricing.

Adding on

Panasonic Personal Computer Co., which gained modest momentum in the market recently, brought out a full-motion video pack for its V41 notebook with built-in CD-ROM. Panasonic also added a passive-matrix color screen model to the V41 family.

Sharp Corp., which has been an also-ran in the notebook market, introduced products that may turn some heads. The company showed the PC 8700 and PC 8900 with a prototype infrared technology that can send at 4M byte/sec., or four pages per minute — significantly faster than the current Infrared Data Association (IRDA) standard.

Sharp has proposed its technology as a next-generation standard for the IRDA, and its new notebooks will trade data with Sharp's Wizard handheld. The notebooks will also have a version of Cirque Corp.'s GlidePoint Trackpad finger mouse, 16-bit stereo sound and either an 8.4- or 10.4-in. active-matrix color screen.



Unisys' Travel Asset Series *notebooks weigh 4.2 to 4.9 pounds and have full-size keyboards*

Comeback kid

Meanwhile, Unisys Corp. re-entered the notebook business following its large systems brethren Digital Equipment Corp. and Hewlett-Packard Co. [CW, Nov. 14].

Unisys' new Travel Asset Series notebooks weigh 4.2 to 4.9 pounds but have full-size keyboards and use up to a 25/75-MHz DX4 chip. Pricing ranges from $3,034 to $5,407, depending on configurations. Unisys' 6.3-pound Travel Partner notebooks cost $3,785 to $5,610.

The rash of notebooks with high-powered features is a response to an expected corporate user move to replace desktops with notebooks, said Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass.

"Corporate belt-tightening will drive this, as [companies] move to one PC per employee," Stephen said.

A number of other mobile products also appeared at Comdex. Motorola, Inc. showed its Envoy personal digital assistant, which is based on General Magic, Inc.'s Magic CAP operating system. The 1.6-pound, 5½- by 6-in. product was demonstrated with several applications, including one that runs Notes over the Advanced Radio Data Information Services network. Freestyle, a forms-based development and run-time tool from Software Partners, Inc. was used as a front end, and RealWorld Solutions, Inc.'s intelligent Mobile Server was used as the back end.

Envoy, a sleekly designed product with a hinged, fold-over screen, will probably be announced late this month and ship early next year for less than $1,499. Panasonic showed its prototype General Magic personal digital assistant, which it plans to release in mid-1995. Sharp also briefed users on its K-PDA, which sources said is its next personal organizer.

[redacted]

Telebyte Technology, Inc. has announced Model 277 FlexMode Fiber Optic Modem, an asynchronous fiber-optic modem.

According to the Greenlawn, N.Y., company, Model 277 FlexMode Fiber Optic Modem's optical interface can operate in point-to-point or ring configurations.

The modem's electrical interface can operate in point-to-point or multidrop configurations.

Model 277 FlexMode Fiber Optic Modem costs $285.

▶ *Telebyte Technology*
(516) 423-3232

Clearlook Corp. has announced Clearlook 1.1, an OS/2 word processor.

According to the Burke, Va., company, Clearlook 1.1 provides a flexible, cellular structure and multithreading of documents.

Features include a multilingual spell checker within the same document, autonumbered footnotes as the user writes and text transformation features for mail merge, envelope printing and tables of content.

Clearlook 1.1 costs $199.

▶ *Clearlook*
(703) 425-1163

PerfectOffice

CONTINUED FROM PAGE 39

Of the applications in PerfectOffice, the most improved is WordPerfect 6.1. Among the many improvements are increased performance, a more intelligent grammar checker and a "make it fit" feature that expands or collapses text to make it fit in an allotted space.

Myriad less dramatic improvements will help simplify life at the keyboard. These include an undo and redo function to reverse the last 300 actions, a paste function that cleans up extra or missing spaces during a cut-and-paste operation and a simple paste operation that conforms the appearance of pasted text to surrounding text.

New features in Quattro Pro include in-cell editing, Messaging Application Programming Interface (MAPI) and Vendor-Independent Messaging (VIM) support and Help enhancements.

Enhancements to Presentation provide interactive assistance in designing a slide show.

InfoCentral improvements include a simplified method of adding new objects to already-selected objects, exchanging calendar and task information with GroupWise and scheduling recurring events.

Envoy, a VIM- and MAPI-compliant document transmission technology lets recipients view and annotate, but not edit, documents in their native format. Envoy, like GroupWise 4.1, requires a network.

PerfectOffice 3.0 offers administrators two network installation modes. The Corporate mode lets administrators preselect settings for all users. A Professional mode enables individual users to select their own program settings.

Object Exchange Technology includes Publish and Subscribe services. With this technology, users can link objects residing locally to a remote data source. When the source (publisher) changes the data, the subscriber's data updates automatically.

Users can readily connect to different servers by clicking on a Network navigation button in the File Open dialog box. Future versions of PerfectOffice will contain Component Integration Laboratories' OpenDoc technology, which will provide cross-platform access in addition to cross-application integration.

More than any other vendor, WordPerfect puts its products through more facelifts and name changes than someone in the Federal Witness Protection Program. But this time it was worth the wait.

Millman is a principal at Data Systems Services in Croton, N.Y., a consultancy that specializes in information systems services.

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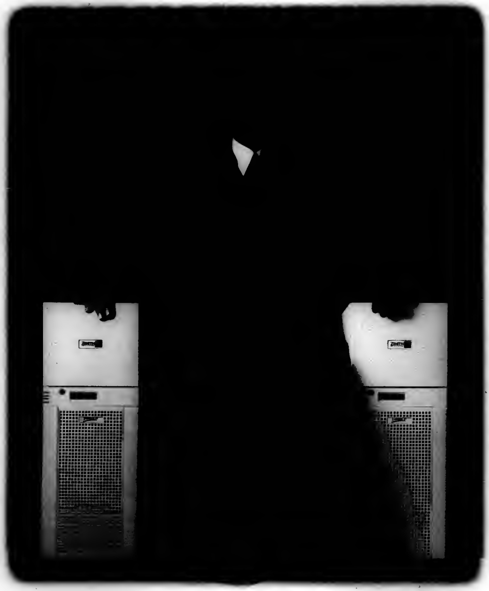

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CARSON GROUP
(SEE STORY BELOW)

[redacted]

Jean S. Bozman

Hardware mixers

The announcements at Comdex/Fall '94 about Microsoft's Windows NT's being put on more RISC platforms, including PowerPC systems, were just a taste of the fundamental changes in systems buying that IS managers will face starting next year. New generations of mix-and-match hardware platforms and operating systems are on the horizon, and users will have to learn to work in the environment they create.

Rather than shopping for the best Unix-RISC server or even the best Intel PC server, users will soon be able to order just about any combination of operating systems and hardware. The offerings include hardware based on Intel chips, Sun Microsystems' SPARC chips, IBM/Motorola/Apple PowerPC chips, Mips Technologies' chips and Digital's Alpha chips.

Systems vendors will provide a choice of operating systems, much as restaurants offer a menu. Even IBM has agreed to factory-load its OS/2 or AIX Unix systems or Sun's Solaris system on PowerPC workstations next year.

Things are bound to be confusing at first as users try to sort out the best combination of platform and operating system for their business. But the advantages will be there, too — once the dust settles. For one thing, users will be able to install standard hardware platforms and then change operating systems and applications at will as business conditions change. Others will standardize on operating systems, such as Sun's Solaris or Windows NT — and feel free to change their hardware as needed.

Shifting gears

Applications, not operating systems, will drive IS decisions more than ever before. So it will become more important to decide on Lotus' Notes or Microsoft's Office suite than to worry about whether Notes runs on Unix or whether Office will run on RISC.

Some users saw the change coming last year, as they pondered an Intel-only strategy, for example, or standardized on Unix systems — no matter what the hardware platform. "Operating system nirvana would be where I did not have to worry about what the chip was, and I did not have to worry about what my operating system was,"

Bozman, *page 65*

Sun/Sybase combo bests Mac in speed

Financial firm picks speedier system for number crunching

By Mark Halper

Fast-growing, New York-based financial consulting firm The Carson Group provides some hard evidence that users do indeed want faster hardware.

After growing up as a devout user of Apple Computer, Inc. systems, the 5-year-old company earlier this year brought in a Sun Microsystems, Inc. SPARC 10 server as a database server and a Sun Classic workstation as a front end to it, accessing a Sybase, Inc. database.

According to Carson partner and analyst John Papa, the selection went against the company's wish to stay with Macintosh systems, which are easier to use and less expensive than Unix equipment such as the Sun/Sybase combination.

"One of the reasons we looked at the SPARCstations was to be able to crunch larger volumes of data," Papa said. "We also wanted to do that in the most economical fashion and ease-of-use fashion, so we wouldn't need someone who is a Unix expert."

In the end, number crunching won out when Carson spent $35,000 on the two Sun boxes and another $18,000 on a limited Sybase license.

The company decided it needed Sun's speed and power to support an expansion of services.

Carson, which analyzes stock performance for its clients, was at that time expanding the number of companies it compares with its clients from about 1,000 to 5,000. The increase was too much of a burden for even the fastest PowerPC-based system then available from Apple.

Carson Group partners *David Asofsky (left) and John Papa: Had Apple hardware been up to the task, the firm would have spent one-tenth what it spent on the Sun server*

"We could crunch the data on the Mac, but we didn't want to crunch it in a week. We wanted to crunch it in a day," said Carson Group

Sun, *page 65*

Mac software enables multimedia data distribution

By Suruchi Mohan

In an attempt to stay ahead of the pack, Emotion, Inc. has added software distribution functionality to video editing in a new Macintosh product called CreativePartner.

CreativePartner is distribution and collaboration software for video. Gerry Machi, chief executive officer of the Palo Alto, Calif., company, said he has added two features to his software to distinguish it from the myriad authoring and editing tools on the market today.

CreativePartner now can distribute video, sound and photographs over a LAN and a wide-area link using Ethernet and Token Ring LANs and frame relay over a wide-area network.

CreativePartner gives *users a realistic distribution mechanism*

CreativePartner also performs destination checking to see if the destination has enough space to accommodate a video file or if the file already exists. It also tracks transmissions, and in the event of a link failure, picks up from the drop-off point.

That's entertainment

Although the product has great potential for a wider business market, it will be immediately important in the creative content industry, such as advertising and entertainment, said Cheryl Ball, a program director at Business Research Group in Newton, Mass.

Although a niche product right now, CreativePartner does add something to the state of the art in multimedia data distribution, Ball said. It gives users a realistic distribution mechanism and works the way people do in a given environment.

Users said the software distribution feature of CreativePartner is a boon in an industry where using courier services to send video tapes back and forth is the norm. "It collapses cycle time and decreases the turnaround time" for advertisements, said Fred Smith, CEO of Leap Partnership, an advertising agency in Chicago. Smith added that there are three ways to communicate about video — letters about videocassettes, a phone conversation with the client and physically sending the tape. CreativePartner eliminates all of these by sending files over the network and allowing users to annotate them.

One step ahead

Young & Rubicam came late to technology, said CIO Nicholas Rudd. Yet, ironically, the data types the advertising agency uses — video, sound, graphics — are about 10 years ahead of the curve.

Faster than flying

Nicholas Rudd, chief information officer at Young & Rubicam, Inc., an advertising agency in New York, said there is definitely a business case to be made for using the product. It saves a lot of travel time.

Rudd said travel time for two or three employees visiting a local client translates to more than one employee day. With CreativePartner, those employees can send a video clip to the other end of town and get an answer back quickly.

The product, which is available now, costs $7,500 for a five-user system.

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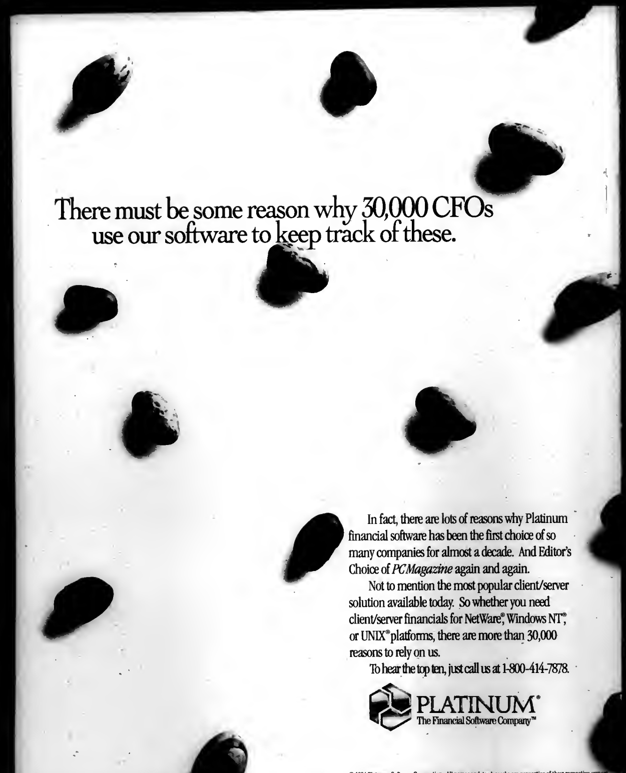

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Component Software

December 5, 1994

Introduction

As companies prepare to compete in the 21st century, the ongoing movement to align information technology with business has become a top priority. Although enterprises continue to believe that information systems are key to corporate competitiveness in the global economy, they are questioning their old assumptions about technology.

According to the *Harvard Business Review*, successful companies commercialize two to three times the number of new products as their competitors of equal size. They also compete in twice as many geographic markets, and bring products to market twice as fast.

As businesses re-engineer, develop new virtual relationships with suppliers and strive to closely bond with their customers, they scrutinize their existing software and application development practices. Many executives feel that their heavy investments in technology have not paid off and have also failed to allow their companies to respond to new market demands.

One result of this dissatisfaction with information technology is the realization that, while the U.S. economy has made a transition from an industrial/manufacturing phase recognized for its mass production and reliability, to an information-based economy marked by increased customization and discovery of market niches, the software industry has remained largely a cottage industry wherein products are hand-crafted by programmers. And although mass-produced "shrink-wrapped" software has had a significant impact on the end-user community, it has had little influence on the "industrial strength" application development practices in most large organizations.

Despite a variety of new software technologies such as CASE, RDBMSs, 4GLs and objects, the so-called software crisis — runaway costs, abandoned projects, ill-performing systems — which we have been hearing about for the past 30 years has not gone away. If anything, it has become worse due to business complexities that make U.S. programmers churn out twice as much code today as they did in 1970. The situation has also been exacerbated by the increased amount of software in most consumer products, which is doubling every two years.

Studies have shown that a typical software development project overshoots its schedule by 50%. And for every six new large-scale systems put into production, two get canceled. Recent notable failures include the California Department of Motor Vehicles abandoning its seven-year, $44.3 million project, and a Fortune 50 insurance company walking away from a five-year, $100 million investment. According to a recent survey of 24 leading Fortune 500-1000 companies by the IBM Consulting Group, 55% of software projects cost more than expected, 68% overrun their schedules, and 88% have to be substantially redesigned.

OpenDoc

This White Paper is written by Natasha Krol and David Yockelson of META Group, Inc., Westport, Conn.
For more information on the White Paper Program, please call 508-879-0700.

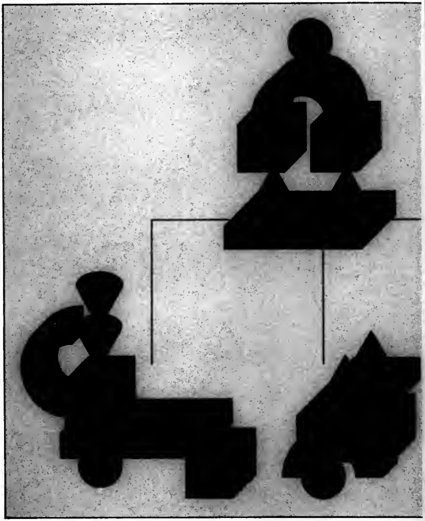


ILLUSTRATION BY MARK S. FISHER

Component Software

How can companies rely on technology to support their business needs? The overall thinking among business people is that software development takes too long, costs too much and produces brittle, inflexible systems that impede rather than enable business applications. Both business and technology communities agree that the current method for developing and adapting software must change.

At the heart of this change is a shift from the current craftsmanship paradigm — programs built to order from project to project — to that of an organized industry centered around the production of software components distributable across heterogeneous desktops and networks.

Stereo Components

Software components can be compared with various modules comprising a stereo system: a tuner from Bang and Olafsen, CD player from Sony, cassette deck from Nakamichi and an amplifier from Technics. Through previously agreed upon interfaces and well-delineated functions, which are packaged as foolproof black box components, these modules create a true mix-and-match environment.

With stereos, consumers assemble the system themselves. Unfortunately, with today's software systems, users in Fortune 1000 companies have enough difficulties in using it let alone building it.

Also, a stereo system is created with heterogeneous components that have been manufactured by different vendors in different countries at different times. For instance, an amplifier may have been manufactured several years before or after a CD player. In the world of traditional software development, simply upgrading to a new software version is viewed as a major inconvenience and disruption. Implementing an operating system or DBMS can easily be a decade-long process.

Software components are defined as prefabricated, pre-tested, self-contained, reusable software modules — bundles of data and procedures — that perform specific functions. Two examples of specific functions are: business-related — customer service, claim processing, inventory, FDA submission; or housekeeping — report generation, fax, print.

Component Software and Business Processes

Business Process re-engineering, defined as the radical design of business practices, has been described by *The Wall Street Journal* as the most important initiative in American business for the past 25 years.

As companies re-engineer their businesses to support new market demands, they discover the importance of horizontal core value-added processes spanning multiple departments and legacy applications.

One of the difficulties of implementing these cross-functional processes is that it requires tighter integration of previously unrelated "stove-pipe" information systems and a new uniform model of how, for example, customers relate to product, product relates to sales to marketing, etc. As companies develop new applications supporting core value-added processes, they will be looking to component-based software to provide an architectural solution to codify, enforce and integrate them.

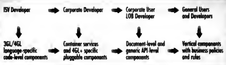
The idea behind components is to create either corporate or line of business (LOB) reservoirs of pre-approved modules that have generic functionality satisfying a large portion (70% to 90%) of new applications, fine-tuning and custom-tailoring a smaller amount of code (10% to 30%).

The benefits of such software development practices will be realized both on the business and technical sides. Components will enable the following:

- faster time to market, since the bulk of an application is already there
- reduced expenses because applications do not duplicate existing functions and are not written from scratch
- code reuse — the Holy Grail of software development
- quick response to changing customer needs and competitive pressures
- increased customization, addressing emerging market segments
- consistent interpretation of business rules codified within components
- modularized large-scale efforts, reducing failure rates
- fine-grained integration beyond "Band-Aid" interfaces

Corporate Component Users and Uses: Present and Future

Figure 1


ISV Developer
Corporate Developer
Corporate User LOB Developer
General Users and Developers
3GL/4GL language-specific code-level components
Container services and 4GL+ specific pluggable components
Document-level and generic API-level components
Vertical components with business policies and rules

Source: The META Group

- malleable systems that grow with business, e.g., adding a "Pacific Rim" component to a series of international insurance components
- higher quality, reliable systems via pre-tested and pre-approved components
- less complexity through self-contained black box modules
- advantages in treating causes (components are fundamental "DNA" building blocks) rather than symptoms of application development.
- simpler testing and debugging, contributing to accuracy and ultimately to user satisfaction.

Component Software Hierarchy/Evolution of Servic

Figure 3

Source: The META Group

Components: the Grand Vision

The grand vision behind components is the establishment of a component industry where software will be built, sold and bought by way of components, as opposed to application programs. According to this vision, systems will be assembled rather than written from scratch. Business users will visualize and conceptualize their business applications in terms of components that interact with each other, just like customers interact with products, sales people interact with consumers and enterprises interact with suppliers.

Component Software: Pros and Cons

Figure 2

Source: The META Group

However, this vision is a long way away from reality. An evolving software industry trying to address the economics of components has many questions to answer:

- how much is a component worth?
- how does a company account for development costs?
- how do vendors set prices?
- how do companies measure return on investment?
- how should components be classified: vertically, horizontally, by data type or by application?
- how should components be packaged?
- what are appropriate distribution channels: retail, systems integrators, the Internet or VARs?
- what are the mechanisms for quality assurance?
- what amounts of training and support are required for corporate applications?
- how should components be licensed?
- who are the customers: system programmers, application programmers, business users or ISVs?
- what are the component categories?
- what are the standards — de jure versus de facto — and how are they introduced and enforced, by committees or in the market?

The component industry will not develop overnight. It will take multiple iterations of multiple initiatives within the vendor, user, academic and systems integration communities. Vertical industries and the U.S. government will also have to agree on common ways to answer the above questions.

Object Technology and Component Software

The idea of components is not new. In the past, several technologies including expert systems (Neuron Data, Inference) and advanced mainframe development environments (Sapiens, Huron) attempted to institutionalize component-based development. More recently, object technology has been introduced into Fortune 1000 companies with the view towards creating internal highly reusable environments augmented by plug-and-play ISV libraries providing either vertical (insurance, pharmaceutical, manufacturing) or horizontal (HR, accounting, general ledger) functions. And despite the tremendous progress made by object technology in the commercial markets, the original vision has not become a reality.

The major benefits reported from the use of object technology have been ease of use and rapid application development. However, large-scale reusability, which provides the foundation for component development, has never materialized. In general, the percent of reuse from application to application across departments is around 10%, and enterprise wide it is almost nonexistent. The following inhibitors have contributed to the lack of reusability:

- Tool and language based solutions — developers tied to the specific programming language or tool, like a particular version of C++, previously used.
- Source code dependence — developers' inability to update or customize an existing product without access to the proprietary source code.
- Release to release updating — developers forced to recompile code for each updated version of a product.

In addition, these inhibitors have produced the following results:

- Lack of a universal object model accepted by ISVs as an underlying foundation for building components.
- Lack of commercial C++ and Smalltalk libraries beyond GUIs, communication protocols and mathematical/graphical functions
- Lack of sopbisticated browsing tools, dictionaries and repositories
- Lack of internal skills, culture, discipline and appropriate reward mechanisms

The OpenDoc™ architecture for component software is an attempt to establish a commercially viable object-oriented computing model by building consensus among software vendors.

OpenDoc Component Software

The evolution of software from monolithic and centralized to distributed client/server applications has driven the creation of flexible programs (from a content and development standpoint) that can communicate over a network. Further, corporate organizations are also evolving into distributed entities, with teams of workers united across heterogeneous computing platforms. Clearly software is becoming network-centric, and developers must take that into account when building applications. The OpenDoc architecture was created with the goal of enabling interoperability among heterogeneous computing platforms.

The OpenDoc architecture was created with the goal of enabling interoperability among heterogeneous computing platforms.

CI Labs and OpenDoc Technology

Announced officially in 1993, the OpenDoc architecture was initially considered a component contender to Microsoft's Object Linking and Embedding (OLE) purely by the weight of its parents: Apple, IBM and WordPerfect.

In 1993, those companies founded Component Integration Laboratories (CI Labs) which will facilitate the evolution of the OpenDoc standard for component software and integration. CI Labs is currently comprised of Adobe, Apple, IBM, Lotus, Novell (including WordPerfect, tbe Novell Applications Group), the Object Management Group (OMG) and Taligent. This non-profit organization is charged with the management of the OpenDoc architecture specifications and the validation of OpenDoc implementations.

This is a different tack than that taken by Microsoft, CI Labs foremost competitor, which is the exclusive creator, governor and distributor of OLE specifications. However, Microsoft's ownership in market share of the desktop, be it through operating systems or applications,

CI Labs Driving OpenDoc Standard

CI Labs is an open venture that anyone can join. The value of CI Labs membership is in being able to take advantage of the OpenDoc technology. CI Labs members will build, manage and jointly evolve the OpenDoc architecture through their collaborative efforts.

There are currently two types of membership within CI Labs: members and sponsors. While any company can be either type, members cannot nominate or serve on the board of directors, the governing body for the organization. However, they may participate in OpenDoc's direction through technical review, alpha and beta testing of software, and other software development activities over time.

Both types are fee-based, with members and sponsors paying an annual fee proportional to their revenues. Sponsors pay an additional fixed fee. In either case, CI Labs membership means an early look at, and access to technology that has the potential to define future software products.

What is OpenDoc?

components: *A self-contained, reusable software module — a bundle of data and code — that performs specific functions. OpenDoc part editors, part viewers, and* [illegible] *are examples of components.*

parts: *A portion of a compound document. A part consists of data (e.g., text, graphics, spreadsheets, video) plus, at runtime, a part editor that manipulates that data.*

documents: *A user-organized collection of parts.*

The OpenDoc component software architecture is a set of technologies and services attempting to provide a cross-platform component software development environment.

The OpenDoc architecture was constructed with various technologies supplied by CI Labs' Sponsor companies to create a collective functional baseline for OpenDoc component software and represent its inherent capabilities, such as dynamic linking, object messaging, network-capable scripting and persistent object storage. Apple Computer is contributing Bento™, Open Scripting Architecture (OSA), OpenDoc Compound Document Services and OpenDoc Component Services. IBM is supplying its System Object Model (SOM) technology. WordPerfect, the Novell Applications Group, is providing its ComponentGlue™ Technology, enabling interoperability between OLE and OpenDoc components.

For the founders of CI Labs, return on investment will entail a head start on OpenDoc source code. For example, IBM is developing OpenDoc for OS/2 and AIX; Apple is developing it for Mac OS; and WordPerfect is developing it for Windows.

OpenDoc Component Services

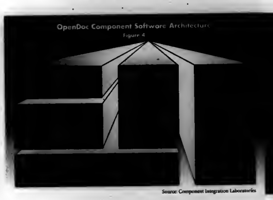
OpenDoc technology goes beyond the concept of the document. OpenDoc Component Services is a set of platform-independent libraries that enable developers to create custom applications from multiple components, including record-oriented data.

From a user's perspective, OpenDoc Component Services is comprised of parts, such as part editors or part viewers, that use or manipulate components. An OpenDoc part viewer, for example, provides the functionality that enables data within a part to be viewed. An OpenDoc part editor can display and change the data within a part. OpenDoc parts are built to allow in-place editing, or the manipulation by a user of data in a part without leaving the context of the compound document or application in which the part is displayed. OpenDoc Component Services facilitates the creation and system-level manipulation of parts via a built-in storage mechanism called Bento.

Storage Services (Bento)

Bento, available in over 100 products, including Lotus 1-2-3®, provides the persistent storage mechanism necessary for OpenDoc parts to be shared dynamically among users and applications. Bento not

OpenDoc Component Software Architecture
Figure 4



Source: Component Integration Laboratories

What is OpenDoc? (continued)

only permits the data to be detached from the application, but goes one step further. It does not require the parts themselves to be governed by a particular application. Instead, Bento relies on the ability of OpenDoc parts to communicate with one another via SOM.

The hierarchical nature of Bento storage, combined with a self-contained index, allows OpenDoc parts to be very complex, as well as addressable to and from other storage mechanisms and applications that understand the Bento structure. This is especially important considering the compound nature of documents created with OpenDoc parts and services. Not only can Bento track the identity and location of parts within documents, but it also controls the movement of data, e.g., file saves, in and out of the parts. The hierarchy of these parts and subsequent data relationships within a document are tracked by the index kept within Bento, a reflection of the user's logical construction of parts.

OpenDoc Compound Document Services

With OpenDoc Compound Document Services, documents need not travel over networks to provide benefits. Rather, it is their ability to act as shells (or containers) for collection of parts that makes them important. OpenDoc containers act as arbitrators (rather than controllers) for OpenDoc parts. They do not dictate part editing and viewing interaction so much as they provide services enabling these functions to happen. This allows the user to edit in place different kinds of content in multiple formats.

Compound Document Services defines how OpenDoc parts interact, not act, within documents. Take the example of the following two products created with OpenDoc Component Services: a financial application developed in Smalltalk and a charting component built in C++. Neither product need identify its intrinsic functionality to the other to interoperate; rather, the language-neutral characteristics of SOM allow both parts to communicate with each other.

In contrast to the document created with OpenDoc parts, an OLE container acts as a boundary and governor for the "objects" within it. A part, in OLE's case, might be a VBX (Visual Basic Custom Controls), an OCX (OLE Custom Controls), or in the future, a component encapsulated via Visual Basic. OLE objects must act accord-

Managing Enterprise

Enterprise business documents such as claims, manuals and forms are becoming the primary paradigm for capturing corporate information. As such, they are challenging the dominance of record-oriented data.

This is apparent by the amount of money and time spent by corporations managing a combination of paper and electronic documents. For example, document management consumes 40% to 60% of the average worker's time, 20% to 40% of a typical company's labor costs, and 12% to 15% of corporate revenues, including document creation, management and distribution.

Necessarily, compound document technology, or the assembly of electronic document-like components which could include images, video and text, will become an overall framework for managing and disseminating various non-record-oriented information. Further, the evolving information highway infrastructure, especially the Internet, will provide a foundation for the distribution of electronic documents.

From an OpenDoc perspective, this represents an important opportunity in the near term. The [illegible]tion of compound documents, [illegible] with the management of their constituent components, presents several challenges. How can the components be made to work together and exchange data? How are the components distributed over a network? Must users have applications at their desktop to deal with these components? How can users on different computing platforms share compound documents?

The OpenDoc standard is in an ideal position to answer these questions and ultimately deliver superior ing to logic and physical capabilities presented to them by the container. Further, the individual properties of an OLE object must be understood by its container to be recognized. The reason OLE was architected in this manner is that it was designed to enhance the communications between applications in Microsoft's desktop product suite. This architecture choice made in the past may prove to be inadequate for general purpose component development or distributed computing.

The hierarchical nature of Bento storage, combined with a self-contained index, allows OpenDoc parts to be very complex, as well as addressable to and from other storage mechanisms and applications that understand the Bento structure. This is especially important considering the compound nature of documents created with OpenDoc parts and services.

OpenDoc Automation Services

The Open Scripting Architecture (OSA) provides network-capable scripting through OpenDoc Automation Services. OSA automates interactions among components and scripting languages, and ultimately, applications. In the long term, OSA will enable "off the shelf" components to be scripted together to create custom workflow solutions. In addition, OSA's scripting-language neutral model will enable any scripting language (REXX, LotusScript, AppleScript) to be used to construct structured workflow applications.

OSA is based on standards, i.e., defined nouns and verbs, that make the ability to script across applications and parts consistent, and control them via commands delivered through an overlying scripting language. However, applications must publish their actions and features to be scriptable, and while OpenDoc developers will do this as a matter of course to make their parts more accessible and valuable, it is not clear whether the majority of application developers will expose enough functionality to make scripting widely usable, especially if they do not rapidly code to OpenDoc specifications.

OLE Automation, Microsoft's closest parallel to OSA

[illegible]

[illegible] components. [illegible] men [illegible] static, [illegible] more for [illegible] 2.0 addresses [illegible] linked [illegible] single [illegible] to [illegible] networks while retaining [illegible] to be edited. Cur- [illegible]

[illegible] ing [illegible] tral characteristics. [illegible]

What is OpenDoc? (continued)

within OLE, faces the same functionality problem, but will have the advantage of a large number of OLE-enabled applications with which to link from the get-go. Currently, OLE Automation is difficult to implement. Further, OLE Automation is not recordable.

In contrast, OSA offers recordability, enabling macro creation and attachability in addition to pure scripting. OSA attachability will provide a link to non-OpenDoc applications by allowing them to be attached via embedded objects. OSA scripts are also network-aware as opposed to the desktop-awareness of OLE Automation, making it possible for users to create sophisticated distributed applications.

Consider that in current workflow systems, applications are afterthoughts launched by the recipients of tasks involving them, e.g., a document that must be approved. Imagine, through OpenDoc services, applications automatically sending work to each other. Or conferencing systems that can schedule multiple-user sessions by reading the calendars of the participants. Or human resources systems that automatically send out 401K update forms by E-mail on employee anniversaries. OSA will extend the capabilities of process-oriented workflow systems by enhancing interapplication communications without burdening the user.

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Object Management Services (SOM)

OpenDoc parts can be described as granular applications capable of communicating with each other as peers. OpenDoc parts have no preconceived notion of a client or a server; developers build parts that can be viewed and edited across platforms, assuming the developer has built the editor and/or viewer for each intended platform. Further, the developer need not worry about defining communications methods among parts.

A fundamental part of the OpenDoc architecture is IBM's System Object Model (SOM). The use of SOM as the underlying object model for OpenDoc provides the following benefits:

- Component inheritance and subclassing. Component developers do not need to supply source code to allow their components to be subclassed. Further, SOM allows fixes and enhancements to be made to a component without the need to recompile pre-existing applications that are clients to that component.
- Language-neutral components. A component can be implemented in one language, subclassed in another language, and included in an application written in yet a third language.

For distributed computing to be successful, it should not matter where a component is located. SOM's object distribution framework provides transparent access to remote components anywhere on a network. Further, the distribution framework is extensible, allowing services such as security, transactions, and naming to be added by IBM or by ISVs.

SOM is fully compliant with the Object Management Group's Common Object Request Broker Architecture (CORBA). Thus, OpenDoc components will not only be able to access other OpenDoc components across a network but will also be able to access other CORBA-compliant systems and services as they are developed.

OpenDoc and its proponents must be able to exploit Microsoft and OLE's lack of presence in server applications across the network while providing connectivity to desktop applications. Although OpenDoc for OS/2 will fulfill this requirement, OS/2 does not have sufficient desktop presence to win major ISV support. Microsoft's ownership of the desktop through its Windows operating system and growing stable of OLE-enabled applications will not be effectively engaged without the ability to distribute components across networked hardware and software platforms.

Distribution over a network is intended to be a major differentiator between OLE and OpenDoc component software. While OLE 2.0 does not have this capability, subsequent versions that tie to Cairo, Microsoft's future (1996) server operating system and acknowledged OLE engine, will.

Still, the Microsoft argument is just that: a Microsoft-centric future, based on OLE-enabled applications on Windows desktops, Cairo server, etc: The message is clear — CI Labs founders have about a year to deliver distributable components via OpenDoc before Microsoft lowers the boom.

OpenDoc Interoperability Services

Despite its challenges, the OpenDoc standard does possess an ace in the hole. In addition to bringing the OpenDoc standard to Windows, WordPerfect's other major task as a CI Labs founding sponsor is making OpenDoc components interoperable with OLE 2.0 objects (and beyond). WordPerfect has accomplished this by using the published OLE specifications to develop an interoperability layer to the OpenDoc architecture, resulting in full two-way compatibility between OLE objects and OpenDoc components.

The development of this capability, the ComponentGlue technology, means that OpenDoc parts can be embedded in OLE objects or applications. OpenDoc parts appear as OLE objects to the Windows registry and OLE objects can be embedded in OpenDoc containers. This capability is meant to allow OLE-enabled desktop objects to communicate easily with distributed OpenDoc parts. Secondly, ComponentGlue provides OLE automation and OCX compatibility between OLE and OpenDoc parts.

Functionally, an OLE object does not gain OpenDoc characteristics by being embedded in an OpenDoc container; it is merely an encapsulation and a way for both types of objects to coexist and exchange information. However, this relationship does offer several economies. First, because of the reduced overhead involved in coding to the OpenDoc specifications, ISVs and corporate developers can use the OpenDoc standard simply as an easier way to implement OLE.

While this is not likely to happen among the major ISVs that committed to OLE 2.0 to ensure that they will not be left behind by Microsoft, it does present an opportunity to those ISVs that have less development bandwidth and find coding to the OLE specification a burden that they cannot handle. Early ISV reports have indicated a less significant development effort and a significant gain in functionality in coding to the OpenDoc rather than the OLE specification.

The ComponentGlue technology is a necessary path to interoperability between OpenDoc parts and OLE objects. For CI Labs and its founders to try to forcibly displace OLE among ISVs and corporate developers would be a fatal mistake. Further, ComponentGlue lets developers leverage the experience gained coding to Microsoft's OLE specification and learning about components.

Interestingly, Novell is an example of a company that could benefit in this way. Facing competition from both Microsoft and Lotus in the software suite wars, Novell has realized that its stovepipe set of applications — WordPerfect, QuattroPro, GroupWise, SoftSolutions and Envoy — must be able to communicate with each other and with other applications over the network. With AppWare having all but died on the vine, Novell recently announced that it was discontinuing development of the Foundation — which leaves Visual AppBuilder and resultant ALMs without a true home, so to speak. Novell realizes that it must evolve its product set to a more unified set of components.

Moreover, Novell would enjoy implementing a solution that would not keep it tied to Microsoft, since the two have become fierce competitors at the desktop, on the LAN and in other environments. The OpenDoc architecture presents a perfect opportunity for Novell to retrofit its applications into communicative components that leverage the network while not locking itself into a proprietary Microsoft OS future. Further, the ComponentGlue technology could enable Novell to capitalize on OLE development investments while keeping an eye toward the future.

[illegible]

gives OLE a dedicated end-user channel as well as a making it a virtual "must-include" for ISVs. Indeed, many ISVs have developed to OLE specifications, but it is far and away Microsoft that has made the most use of OLE in linking its various software products. The difficulty of coding to the OLE 2.0 specification is well known in the industry and has forced many ISVs to consider whether or not to OLE-enable their products.

The problem is, Microsoft objects do not currently fit the true component model.

OpenDoc component software has not yet gained as much support as OLE. Introduced just as most ISVs were beginning to understand the implications of OLE 2.0, the OpenDoc standard has so far been limited in acceptance by virtue of its early 1995 scheduled arrival date. CI Labs argues that the OpenDoc specification provides the easiest path to OLE. Since OpenDoc components will be referencable by applications as OLE objects, they seem to be right. OpenDoc component software is not an "either/or" implementation decision.

Will OLE Eclipse the OpenDoc Standard?

To look at the future from a Microsoft point of view, it is necessary to revisit the past and explore the history of OLE. In many ways, OLE will be bound by the legacy of Microsoft applications and Microsoft's desire to control the desktop via the operating system, application development tools and the applications themselves. If Microsoft were 100% successful on all counts, there would obviously be no need for OpenDoc services, and Redmond, Washington would be the center of the universe. However, heterogeneity of hardware and software deployment, the growing requirement for distributed components and peer communications, and the inventiveness of other vendors create the need for alternative strategies.

Microsoft has tried to evolve its strategy from what could be viewed as a developer of monolithic, static applications to a developer of interactive components. The problem is, Microsoft objects do not currently fit the true component model.

Instead, Microsoft has attempted to re-engineer its existing set of products to mimic the way components should work, at least at the desktop. Its COM defines the way Microsoft components, or components that meet Microsoft standards, behave. By definition, this means Windows and Intel. Although there are OLE implementations for Macintosh and emulations, e.g., Insignia Solutions for Unix, these are not nearly as robust as the Windows alternative.

Microsoft has recently tried to augment its integration strategy by partnering with Digital Equipment Corporation and Candle Corporation to submit a specification to the OMG to link OLE and COM to OMG's standard for interoperability, the Common Object Request Broker Architecture (CORBA) 2.0. Microsoft has previously been averse to working with OMG, lest the specter of interoperability among objects and language neutrality via OMG's Interface Definition Language spoil its control. As a result, it is wise to take these seemingly conciliatory efforts with a grain of salt.

Taking a step back, Microsoft has offered extremely worthwhile capabilities with DDE and OLE 1.0. Each tried to solve the problem of communications between applications — although again these were applications in a Windows environment. DDE was meant to allow Windows applications to exchange information programatically without having to rebuild them. OLE 1.0, which al-

OMG and Connect: Paving the Component Highway

The relationship between OMG and Connect, a $12 million start-up in Cupertino, Calif., is an early example of the new electronic commerce paradigm for objects. These two organizations will jointly provide a method of delivering object libraries over the Internet, enabling the entry of components onto the information superhighway.

To accomplish this, Connect will provide its "Virtual Private Network" technology for repository, delivery and billing. Interested companies such as ISVs and independent developers using Unix servers with Connect's proprietary environment will be able to provide Internet users the ability to view an available component index, obtain an on-line demo, retrieve components on a purchase or rental basis, and initiate the appropriate billing using a credit card or other options.

For its part, OMG will offer the Interface Definition Language (IDL) standard as the way for components to interact. The main idea is that software companies, e.g., library vendors, who are currently publishing information about their products in trade publications, will put their wares on Connect and let users test-drive them before they buy. This scenario enables a more visible, efficient, immediately gratifying way of distributing components.

lowed the user to dynamically control this exchange, often introduced more confusion and problems than benefit due to its resource requirements. If anything, OLE arrived too early (pre-486, lots of memory, etc.) to be extremely useful.

However, the introduction of Visual Basic Custom Controls (VBXs) through Visual Basic gave developers a taste of the future: modular Windows applications plugged into other Visual Basic applications. As described before, OLE 2.0 offers users such advantages over OLE 1.0 as drag-and-drop, edit-in-place, etc.; but still exists primarily as a constructor of desktop compound documents. Despite this, many ISVs, playing to the prevalence of the Windows platform, have begun retrofitting their products to take advantage of OLE 2.0. Microsoft's head start (as the owner of this technology) resulted in the Microsoft Office suite leading the pack in terms of OLE 2.0 enablement.

Inherent technical advantages enabling faster time to market, reusability, and easier software distribution are convincing reasons to seriously investigate component software.

The next stop is OLE Custom Controls (OCXs), which will essentially replace VBXs as pluggable components. Microsoft will likely add mechanisms that enhance reusability and team development capabilities, features that have been lacking in Visual Basic. These are critical if Visual Basic is to be the strategic product for creating custom OLE objects. By linking Visual Basic, OLE Automation, OCXs, the Microsoft Office applications, the Windows '95 desktop operating system, and Cairo, which will be the central control point, i.e., server for all Microsoft objects, users will theoretically achieve Microsoft object nirvana. However, there are several holes in this scenario. They include coding to the OLE specification, conversion of VBXs to OCXs, the lack of non-Microsoft linkage for OLE automation (unless, ironically, built by the OpenDoc team), no native Unix or OS/2 support at the server or client, and the requirement for Cairo. All these contribute to the strength of the OpenDoc position and the argument for its need.

Distributed Computing with Components

It is important to consider the requirement for components to address each other as peers. In a distributed computing environment, applications should not have to adjust to the concept of clients, servers or hosts. They should merely communicate with each other as linguistic equals, sharing data where necessary and yielding application control to the peer that requires data for manipulation at a particular moment in time.

In the early stages of the component software evolution, applications are still restricted by the notion of clients and servers. For example, an application is an OLE client and/or server, and the way that it communicates with other OLE clients or servers must be well defined for each instance. Such organizations will have difficulties supporting the requirements of distributed, peer-to-peer, heterogeneous environments.

The Bottom Line: The Impact of Components

The implications of a component-based software industry are far-reaching and will manifest themselves in ways that we have yet to understand. Business and technology drivers are rapidly pushing both corporate developers and ISVs to build component software. On the business side, there is a paradoxical requirement for high-level, networked-based distribution concomitant with tighter integration at the application level. Inherent technical advantages enabling faster time to market, reusability, and easier software distribution are convincing reasons to seriously investigate component software.

Component software will ultimately be the only way to successfully implement application environments that can deliver the above advantages. However, like any tool or architecture in consideration for broad implementation, component software requires standards. The OpenDoc specification is one of a number of emerging standards in this area, and while its unique combination of technologies and tools presently gives it a technical edge over its competition, there are still many unanswered questions for OpenDoc component software and its rivals. How will distributed components be managed? How will applications based on them perform? Will enough ISVs support component software development and delivery? These questions must be answered over the next year to allow sufficient acceptance to be gained by the development community.

OpenDoc component software will succeed by demonstrating its superior technology within commercially deployable applications developed by the above communities. ■

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Component Software

Bozman

CONTINUED FROM PAGE 45

said an IS manager at a large East Coast corporation.

But many users are unsettled by the coming tidal wave of hardware/software combinations. They are waiting to see whether Microsoft's NT becomes strong enough and has enough applications to displace Unix. In that case, they could standardize on NT and NT-compatible applications. Others say NT is too limited to offer true open systems interoperability and are sticking with battle-tested Unix database servers for client/server computing.

Flexibility key advantage

For the largest of enterprises — those engaged in global businesses — the best benefit of the new choices will be flexibility. Some divisions may standardize on different operating systems, and IS will no longer have to face painful, time-consuming hardware evaluations for each new application system that comes along. More than ever before, computer systems will be chosen according to the needs of the focal business unit.

Thus, one significant consequence of the emerging hardware/software matrix is that IS is likely to lose even more of its power as a standards-setter. More applications will be purchased rather than written by IS, and user groups will be able to set those applications down on standard platforms bought from systems integrators or value-added resellers.

"Users don't care about the technology," said one business unit manager at a large Los Angeles aerospace firm. "They want the application to work, and they want it to be seamless."

Bozman is senior editor, open systems, in *Computerworld*'s Burlingame, Calif., bureau.

Sun/Sybase combo

CONTINUED FROM PAGE 45

partner David Asofsky.

Had Apple hardware been up to the task, Carson would have spent about one-tenth of what it spent on the Sun equipment, Asofsky said. "It's been sticker shock for us," he noted, adding that Carson faces further costs when it ties about 30 additional analysts into the Sybase database.

Right now, Carson owns an eight-user license. According to Papa, it will cost "probably in the $10,000-plus range" to add those analysts to the Sybase system. Carson plans to do this in late December.

Limited file size

A database factor also helped sway Carson to go with Sun. Carson's previous database management system, 4th Dimension from Cupertino, Calif.-based ACI US, Inc., had a file-size limit of 1G byte, which was too small for some of the files Carson needed. ACI has since made a quantum increase to 128G bytes. Also, 4th Dimension did not at the time offer a native Power Macintosh version of 4th Dimension, although it does now.

> "We could crunch the data on the Mac, but we didn't want to crunch it in a week. We wanted to crunch it in a day."
>
> *—David Asofsky, partner at Carson Group*

The two databases are now coexisting, with 4th Dimension running on Motorola, Inc. 68040-based Macintosh Quadras supporting text-oriented data such as addresses and company profiles. Papa said Carson plans to license SQL Server from ACI, itself an SQL licensee, to give 4th Dimension users concurrent access to Sybase. 4th Dimension would then effectively serve as a front end to Sybase, thereby providing connectivity between the two databases.

Growth spurt

Privately held Carson has grown into about a $10 million company in five years. Its original computer was an Apple II SE.

Asofsky and Papa are among the many Apple users who took note when Apple earlier this month unveiled a 110-MHz version of its Power Macintosh 8100 computer. The new model represented a nearly 40% processor speed boost over existing top-of-the-line 80-MHz Power Macintoshes based on the PowerPC 601 chip [CW, Nov. 7].

The introduction caused some Apple users such as Peter Tittler, vice president of networks and technology at Avis, Inc., to encourage Apple to put the faster processor in lower-end models such as the Power Macintosh 6100.

Tittler noted that while users can use the 110-MHz speed, many do not want to pay the $6,349 premium that goes along with the 8100/110's 2G-byte hard drive and expandability. Apple is expected to offer moderate speed bumps in lower-end Power Macintoshes in January; the 60-MHz Model 6100 would nudge up to 66-MHz, for instance.

According to Pieter Hartsook, editor of "The Hartsook Report" in Alameda, Calif., the 110-MHz processor is indeed generating significant system performance boosts. Early benchmark results indicate that the new systems perform about 30% faster than the 80-MHz 8100s, he said.

Any speed better than none

Although Apple plans a quantum performance leap by the middle of next year when it rolls out systems built on the next generation PowerPC 604, a speed increase for now is indeed good news, Papa said. The company plans to test one of the new 8100s as soon as Apple makes the system available. Apple plans to start volume shipments this month.

A combination of the faster processor and the native Power Macintosh version of 4th Dimension could hold promise for future number crunching on the Power Macintosh, Papa said. He added ease of installation to his list of why he prefers Apple. "It only takes a few minutes to set up a Mac; it takes a few days to set up a Sun," he said.

In the meantime, Carson remains committed to Apple hardware as its desktop system of choice for its 50 employees. It has standardized on the Power Macintosh 7100 and continues to run the Quadra-based 4th Dimension databases.

[redacted]

Advanced Management Solutions has announced Schedule Publisher 4.2, project management software.

According to the Houston company, Schedule Publisher 4.2 lets users exchange, link or merge project data across multiple platforms.

Features include Unix workstation support, a subproject option to break down larger projects and enhanced resource processing capabilities.

Prices start at $1,995.

▶ *Advanced Management Solutions*
(713) 871-9130

Applied Voice Technology, Inc. has announced CallXpress3 3.3, an OS/2-based computer telephony system, CallXpress3 E-Mail Access and CallXpress3 Desktop for Windows 2.0, a LAN-based messaging product.

According to the Kirkland, Wash., company, CallXpress3 3.3 provides unified messaging, interactive voice response and a telephony user interface that lets users manage voice, fax and electronic-mail messages through a phone.

The product creates message category queues so users can search desired message types instead of sorting through all messages.

CallXpress3 E-Mail Access lets users directly access E-mail messages from a phone with text-to-speech capabilities. CallXpress3 Desktop for Windows 2.0 lets users access and manage voice- and fax-mail messages from a desktop PC.

Prices start at $3,000 for CallXpress3 3.3, $2,200 for CallXpress3 E-Mail Access. Prices range from $50 to $100 per user for CallXpress3 Desktop for Windows 2.0.

▶ *Applied Voice Technology*
(206) 820-6000

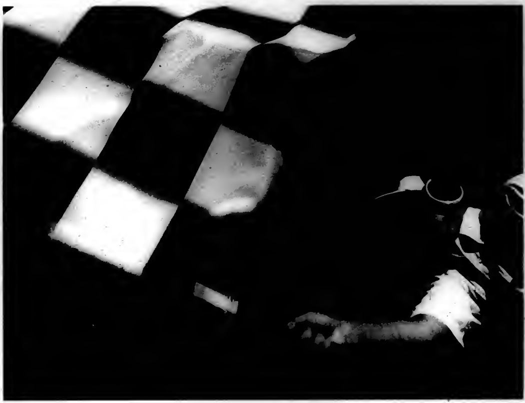
Advanced Visual Systems, Inc. has announced a new release of the Application Visualization System (AVS), three-dimensional visualization application software for Unix workstations.

According to the Waltham, Mass., company, AVS includes expanded graphing capabilities that provide production-quality graphing with hard copy output to users with all levels of data.

AVS also supports numerous plot types and provides control of axes and annotation within plots.

Prices start at $6,500.

▶ *Advanced Visual Systems*
(617) 890-4300



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RAM MOBILE DATA TOUTS WIRELESS PRODUCTS, 73

Paul Gillin

Flame mail burns users

Flame mail sucks.

Sorry if that statement bothers you, but it embodies the kind of crassness that flame mail writers display when they practice their obnoxious craft. A crude minority of on-line residents, often operating anonymously, seems bent on spoiling the experience for the rest of us. Flaming undermines the true value of interactive electronic media, and its practitioners should be ostracized by the rational majority.

Flame mail has been on my mind because of my recent experience as a victim of flaming. I participated in an active discussion on a CompuServe forum on the topic of whether OS/2 gets the press coverage it deserves. The forum consisted largely of OS/2 users, so the tenor of the discussion was naturally pretty slanted. I waded into the discussion as a member of the media to present an unpopular view — that OS/2 doesn't get as much press as Windows because readers want to read more about Windows than about OS/2.

Judging from the reaction, you would have thought I had insulted the pope. While most forum members debated the issue civilly, I got about a half-dozen eyeball-burning flame letters. I was accused of being an arrogant media snob so out of touch with the realities of the market that it was incredible I was even able to hold my job. Or I was so pitifully ignorant of the technology and the issues that I had no business holding an opinion in the first place. One letter writer likened me to the French aristocracy before the revolution and inquired snidely, "Care for some cake?"

No, thanks, fathead. And I don't care for your obtuse attitude, either. The fact is, if I knew less about the on-line world, I might be inclined to simply tune out the whole discussion and write off OS/2 enthusiasts as a bunch of crybabies. Fortunately, I've been around the cyberworld long enough to know that some flaming is a necessary evil and flamers are a minority. But a newcomer might not be so understanding.

Among on-line fanatics, a certain amount of flaming is considered inevitable and even good fun. But most neophytes would be shocked and disturbed to be subjected to the kind of personalized abuse that flamers like to heap on their victims. Like disruptive demonstrators at a political rally, flame mail writers ruin the experience of a much larger group and ultimately damage the credibility of their own cause.

Lately, flame mailers on the Internet have been ganging up on the rookies from America Online who are making their first tentative forays into the Usenet newsgroups. I guess the thinking is if you can scare them away, they'll leave you alone and won't come back.

While it's true that some of the AOL newcomers should be better schooled in 'netiquette, the appropriate response to their gaffes and stumbles should be to help them, not insult their heritage. That's only going to get them mad at you and your infantile cohorts and keep them out of the mainstream of discussion.

Flame mail writers are like school yard bullies who use their fists because they lack grace and tolerance. Settlers of the electronic frontier should treat them like the thugs they are.

Gillin is *Computerworld*'s editor. He can be flame mailed at MCI Mail 575-4120; CompuServe 76537,2413; America Online paulg256; and Internet pgillin@cw.com.

Prepare for ATM

Early adopters say users should get involved now

By Stephen P. Klett Jr.

Most observers agree that Asynchronous Transfer Mode (ATM) will not be ready for prime time for another two years. But it is already time to prepare for its arrival, according to several early adopters.

Many users have been holding back from using ATM because the high-speed networking technology commands a high price tag and lacks mature standards. Most vendors offer first-generation products, and only a few, including Fore Systems, Inc., are rolling out second-generation products. However, few ATM products from different vendors will work together, and the software to manage them on an enterprise level is lagging [CW, Nov. 21].

Now is the time

Ironically, early adopters are urging users to get involved with ATM now for precisely these reasons.

"Why get started with ATM now? The answer is simple: time," said John Boyd, chief networking technologist at Northeast Utilities in Hartford, Conn. Northeast is testing ATM for a LAN backbone application. Boyd added that companies need to get ATM products rolled out and train people to use them, "so you can deliver it to your end users . . . when it's mature."

Northeast Utilities, Bankers Trust Co. in New York and Amoco Corp. in Chicago are among the growing number of companies embarking on aggressive ATM pilots. Despite interoperability hassles related to immature standards and the high costs currently associated with ATM, each of these companies said it believes ATM is the networking technology of the future and that any early experience will pay off in the long run.

Possible initial uses for ATM include collapsed LAN backbone, metropolitan-area network connectivity and high-speed server applications.

Early adopters advised forming close partnerships with vendors. "If you're going to walk on the ATM side of town, choose your friends wisely and walk in groups," Boyd said.

First steps

BEFORE GETTING STARTED WITH ATM, USERS SHOULD DO THE FOLLOWING:

- Poll internal users to understand business needs and concerns
- Start from the inside out — understand the architecture
- Come up with an exhaustive list of features and functions for an ATM pilot
- Determine a minimum set of requirements for the initial deployment
- Understand the network management issues
- Define the pilot configuration
- Ask vendors to price the pilot configuration

Source: Bankers Trust Co., New York

David Beering, staff telecommunications analyst at Amoco, concurred. His company has a "very small" information systems team of 15 people, "so we recognized early on the need for outside participation," he said. Amoco's ATM Research and Industrial Enterprise Study

ATM, *page 73*

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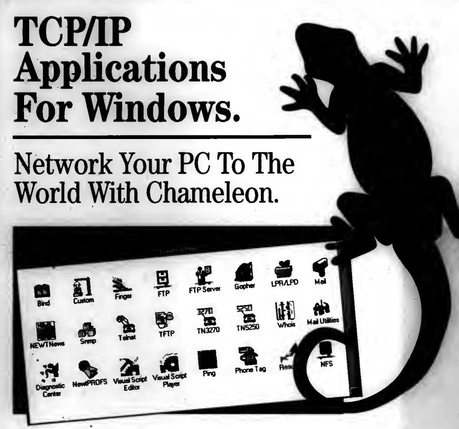

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RAM Mobile touts wireless products

By Michael Fitzgerald
LAS VEGAS

■ The arcane wireless world of RAM Mobile Data USA L.P. took shape recently when the company released a variety of new initiatives.

These include development tools from Research in Motion Ltd. to help users build applications to run on RAM Mobile Data's network; certification of Rockwell, Inc.'s modem chip set to run on RAM Mobile Data's network; and an agreement with Racotek, Inc., a wireless services company in Minneapolis, to resell RAM Mobile Data's network starting in first quarter 1995.

Further, Ericsson GE in Cotowa, N.J., released Version 14 of its Mobitex network, over which RAM Mobile Data runs. Among its new features are host group addressing, which builds in network duplication — an important security feature.

"These are the kinds of things we need in the market," said Andrew M. Seybold, editor in chief of "Outlook on Mobile Computing," a newsletter in Brookdale, Calif. Seybold said wireless has struggled in part because vendors have failed to integrate their networks with terminals and development tools.

Analysts and users cited the development tools from RIM in Waterloo, Ontario, as the most important pieces of the announcement.

The two tools, RAD-I/O and RAD-AT, help shield developers from some of the intricacies of the Mobitex network. In particular, RAD-AT, which lets RAM Mobile Data's network use the standard PC AT command set, will let developers avoid having to write to the complex Mobitex Asynchronous Communications (MASC) protocol that currently controls modem transmissions.

What you need

Five elements users need to use RAM Mobile Data's network:

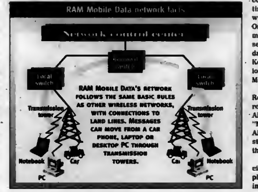
- Portable terminal
- Application software
- Wireless radio modem
- Connectivity between the RAM network and a host
- Communications software at the host

The RAD-I/O tool allows users to transfer files simply by dragging them to the RAD-I/O icon and dropping them there, according to Mike Lazaridis, RIM's president. Plus, with its RIO Access Interface layer, RAD-I/O will also allow applications to connect to Delrina Corp.'s WinFax software to exchange documents between PCs and RAM Mobile Data's network.

"RAD-AT will help erase the Ericsson wireless modem issue, which is causing a lot of problems for users," said Tony Bamonti, a director of software business development at Wireless Telecom, Inc. in Englewood, Colo. Ericsson's wireless modems use a proprietary protocol, which is also difficult to write applications for, observers said.

"These are some advanced tools for Mobitex and should be a good base to establishing a real development standard within the network," Bamonti said.

The new Rockwell chip set for RAM Mobile Data, the RC32ACM, gives RAM Mobile Data packet radio access as well as wireline V.32 bis data modem capabilities and V.17 Group 3 fax/modem capability. Five vendors — Diablo Research, Inc., Novalink Technologies, Inc., AetherWorks Corp., Apex Data, Inc. and Yokowo America Corp. — said they would develop radio modems based on the Rockwell chip set.


RAM Mobile Data network facts

RAM MOBILE DATA'S NETWORK FOLLOWS THE SAME BASIC RULES AS OTHER WIRELESS NETWORKS, WITH CONNECTIONS TO LAND LINES. MESSAGES CAN MOVE FROM A CAR PHONE, LAPTOP OR DESKTOP PC THROUGH TRANSMISSION TOWERS.

On the way

Delivery is expected in the first half of 1995, and modem prices should drop to $500 or less, a significant decrease from today's RAM Mobile Data's modem pricing.

Users said additional competition in the modem market was one thing working in RAM Mobile Data's favor in the wireless market.

"The technology is at a price point where it's affordable ... and with prices coming down, it's really time to" pursue using wireless, said Frank DiOrio, product service manager for customer service at Eastman Kodak Co. in Rochester, N.Y. Kodak has a 500-unit pilot under way with RAM Mobile Data's network.

The release of the Rockwell chip set "is a real coup for RAM," said Alan Reiter, editor of the "Mobile Data Report" in Alexandria, Va. "This stuff is not fluff for them."

RAM Mobile Data officials said the company plans to concentrate on improving the level of integration in its network offerings in the foreseeable future.

"We're focusing on development tools, modems and infrastructure development ... because as we look forward, [these things] will be crucial to the development of the network," said Martin Levetin, RAM Mobile Data's senior vice president of systems and technology.

Still, some point to RAM Mobile Data's tiny installed base and the looming shadow of the rival Cellular Digital Packet Data protocol and say RAM Mobile Data's efforts may not be enough.

"It's a fascinating set of announcements, but it's a race against the clock, and that's ticking off fast," said Mike McGuire, an analyst at Dataquest, Inc.

ATM

CONTINUED FROM PAGE 69

— also called the Aries project — involves more than 15 vendors and is recognized as one of the largest ATM pilot projects in the world.

From a physical perspective, users considering ATM should prepare their networks by installing a fiber backbone and Category 5 cable to the desktop. They should also simplify their network infrastructure by using enterprise hubs and pooling routers.

"If you're going to walk on the ATM side of town, choose your friends wisely and walk in groups."
John Boyd
Southeast Utilities

Education is key

More importantly, early adopters advise users to educate themselves as much as possible about ATM and how it can best be applied to their business.

"Most end users truly do not understand what their business process and needs are — we are our own worst enemy," said E. W. Bud Huber, general manager at Hughes Electronics in Los Angeles and chairman of the Enterprise Network Roundtable. "However, even if you have all the information you need, making an informed decision [about ATM] is not easy."

"It's definitely buyer beware," agreed Farrokh Billimoria, vice president of network engineering at Bankers Trust. "You're going to be better off, and the industry is going to be better off, if you educate yourself. You can't rely on vendors or consultants to do it for you."

There are more than 500 vendors that either offer or plan to offer ATM products soon. Nearly every vendor's approach is different in some way, such as buffering and congestion management schemes, switch design and standards conformance.

"Each one is a trade-off on the other, and if you don't understand the trade-offs, you're going to make the wrong decision," Billimoria said.

To play it safe, Billimoria advises users to do the following:

- Deploy ATM only where standards are available.
- Keep up to date on standards progress within the ATM Forum.
- Ask for beta and general availability dates when talking to vendors.
- Understand your in-house skill set.

ATM releases

CrossComm Corp. and Lannet Data Communications, Inc. last week became the latest networking vendors to proffer road maps for migrating their users to ATM.

CrossComm's ClearPath Architecture is based on the company's XL router products, but it will also support future LAN and ATM switching modules.

The Marlboro, Mass., company will start rolling out ClearPath modules in the first quarter of next year. These will include ATM modules for collapsed backbone and edge-routing applications and LAN switching modules for Ethernet workgroup and microsegmentation switching. Pricing has not yet been set.

Lannet, in Irvine, Calif., will roll out several ATM products late next year. These products are based on internally developed technology and technology acquired via a partnership with Fore Systems, Inc. and from an equity stake in Hynet Ltd., an ATM start-up in Tel Aviv.

Lannet will partner with Fore and Hynet to develop a range of integrated ATM modules with various interfaces to its MultiNet line of hubs. The hubs are scheduled to be delivered in the second half of next year. Users will not have to upgrade the backplane of the MultiNet hubs to install the new modules.

By the end of next year, Lannet will deliver ATM-to-switched Ethernet and ATM-to-shared Ethernet modules as well as an ATM edge adapter for its LANstack stackable hub line. Prices have not been finalized. — *Stephen P. Elett Jr.*

Data methods slow to move to LAN

By Mary Brandel

■ Mainframe users have become accustomed to hierarchical storage management (HSM) software. But winning over LAN customers has proved to be another matter.

HSM software automatically migrates little-used files off magnetic disk and onto less expensive secondary storage media. When users want to access a migrated file, retrieval is also automated.

This year, every major player in the PC LAN storage arena announced or shipped HSM packages for Novell, Inc. NetWare LANs. So far, few sites have adopted it, although experts forecast a booming market next year.

"HSM is not catching on real fast, but that shouldn't be a big surprise," said Michael Peterson, an analyst at Peripheral Strategies, Inc. in Santa Barbara, Calif. "This is an emerging market, and we're going through a normal life cycle process."

Quelling HSM fears

As part of that normal life cycle, a few vendors — Avail Systems Corp., Cheyenne Software, Inc. and Legato Systems, Inc. among them — have started to focus on products that ease users into HSM. Better interfaces, integration with backup software and magnetic disk versions are among the solutions.

"There's an emotional argument" against HSM, said Glen McDermed, a storage analyst at Gartner Group, Inc. Users fear long delays in accessing files, and "they don't like Big Brother imposing standards," said Jeff Koeberl, storage administration manager at Northwestern Mutual Life Insurance Co. in Milwaukee.

Avail is attempting to quell the fear of slow access with its recently introduced magnetic disk-only version of Netspace HSM. In addition, Eastman Kodak Co. is expected to ship a disk version of its software in the near future.

Primary storage might be on a redundant arrays of inexpensive disks, or RAID, system, with files migrating to more conventional disks, McDermed said.

This will help make HSM more acceptable because disk recall time is significantly faster, McDermed said. Plus, he added, "magnetic disk is getting so cheap, why go to optical or tape?"

Robert Wight, president of Avail, claimed that "our sales have skyrocketed" since the new version shipped. In five weeks, 1,000 units were sold — double the sales of the previous two quarters combined, he said.

HSM spells savings

Hierarchical storage management (HSM) software on NetWare LANs can pay for itself in a year

Storage area	Annual cost per year without HSM	Cost savings per year with HSM
Server backup/restore	$22,155	$9,128
Archive	$4,696	$3,870
New disk drives	$81,560	$64,556
Off-line drives and media	$20,856	$18,583
Total	**$129,267**	**$96,137**
HSM software cost:		$60,000*
Overall savings		$36,137

*Four licenses at $15,000 each in a network of 850 workstations on 37 LANs

Source: Peripheral Strategies, Inc., Santa Barbara, Calif.

A second problem for NetWare users is making their backup software aware of the HSM process. "The tendency in the LAN environment is to do full backups," McDermed said. "Every time you do that, you're touching every file," which changes the reference date so that nothing gets migrated.

Cheyenne, Palindrome Corp. and Legato all claim to be developing HSM software that works with their current backup systems.

But Legato said it will ease users into HSM by first introducing archival software for its Networker backup program later this month. "Customers are very clear with us that they want backup, archive and [HSM] products in that order," said Ed Cooper, vice president of marketing at Legato.

"That's certainly what we're doing," Koeberl said. "With archiving, you just identify things you're not going to use anymore and get them onto other media. With HSM, you archive things even if you know they're going to be used and then . . . take responsibility for making it available in a reasonable amount of time."

Monitoring tools

When it does introduce its HSM software, Cooper said, Legato will also deliver tools that help users see where data is and how much data is on the various servers.

"We're creating a large storage pool that no one can see into," Peterson said. "Until we give people viewers that they can manage in this big repository, they won't buy it."

But today, "nobody's shipping that much" HSM software for NetWare, said Brian Ritchie, vice president of marketing and business development at Alphatronix, Inc. Alphatronix has a NetWare 4.0 version, and "acceptance has been very slow," he said.

In fact, Alphatronix is beta-testing a magnetic disk-only version of its HSM software but only for Sun Microsystems, Inc. Solaris environments. "Until we see sales activity [in NetWare], we won't [port] it," Ritchie said.

Health agencies augment big iron to update databases

British Columbian health care makes MPP shift

By Craig Stedman

Health care reform may be on hold in the U.S., but it lives in British Columbia, where control of the industry is being decentralized. That has led the provincial government to undergo a risky procedure of shifting its medical claims database from an IBM mainframe to a massively parallel processor (MPP).

The British Columbia Ministry of Health in Vancouver had to do something. The DB2-based mainframe's database querying performance was not keeping up with the changes wrought by decentralization, which started in 1992 and broadened health care control from a single official to a committee of doctors, nurses, citizens and ministry officials.

"We were getting questions from a wider audience and not meeting our clients' needs very well," said Jesse Davis, MPP project manager at the ministry. The wait just to get queries written was sometimes as long as a month, he added. Extracting and analyzing claims and payment records on the province's 3.3 million residents could take another week, and some complex queries were simply withdrawn because they would have taken even longer to complete.

Enter MPP in the form of MasPar Computer Corp.'s MP-2 system. The MasPar machine, combined with SAS Institute, Inc.'s SAS System data access and analysis software, performed significantly faster than the mainframe on a series of query benchmarks devised by the Ministry of Health last year (see chart page 78).

Persuading management

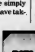
However, persuading ministry officials to swallow the MPP medicine was not a simple task, especially with MasPar's small size and its lack of a proven track record in commercial environments. "I myself had never heard of MasPar before being assigned to this project," acknowl-

British Columbia, *page 78*

Wisconsin system to scrutinize Medicaid bills

By Mitch Betts

Like other states, Wisconsin has for years just paid its Medicaid bills — with almost no questions asked. About $2.3 billion moves through the state's health insurance claims pipeline each year.



But that is about to change. The state is implementing a five-module, $5.8 million information system that will for the first time allow state officials to analyze data flowing through the Medicaid pipeline, question expenditures and spot fraud.

"Historically, we focused on pure transaction processing, so the goal was cost-efficient processing of health care claims. Data was just a waste by-product. Very little analytical processing was done," said Kevin B. Piper, director of the Wisconsin Bureau of Health Care Financing in Madison.

Although other states are implementing managed-care systems to curb escalating Medicaid costs, Wisconsin is taking a more aggressive and comprehensive approach, said Milford Sprecher, an analyst who tracks the state and local government market at Federal Sources, Inc. in McLean, Va.

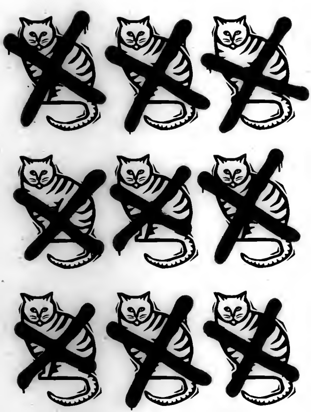
"Many states are just transaction houses [for Medicaid] because of resource constraints, but Wisconsin has really stepped up to the plate on this," Sprecher said. The federal government is paying 90% of the cost of the new Wisconsin systems.

Sprecher predicted that other states will follow Wisconsin's lead in the next few years.

Wisconsin's prime contract is with Unisys Corp., but the system will run primarily on a Hewlett-Packard Co. HP 9000 system and Oracle Corp.'s Oracle Version 7.1 relational database management system. Most of the system will be implemented early next year.

Currently, analytical data is fragmented, incompatible and incomplete, but the

Wisconsin, *page 78*



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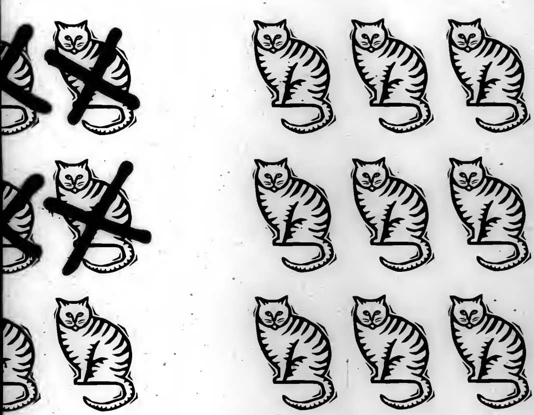

Pentium™ processor-based PCs

British Columbia

CONTINUED FROM PAGE 75

edged Bruce Tyshynski, senior manager and adviser on the MPP program.

The concerns were not out of line considering the recent failures of MPP vendors Thinking Machines Corp. and Kendall Square Research Corp. MasPar has also been buffeted by the increased competition and flattened U.S. government demand that drove its rivals out of the hardware business, said Gary Smaby, president of Smaby Group, Inc. in Minneapolis.

"They've suffered the slings and arrows along with their competitors," Smaby noted. MasPar's sales have been stuck at about the $20 million mark, leading to senior management changes, layoffs and a reduction in the vertical markets it targets from 12 to three, he added. But the move away from "a shotgun approach" may give the company a viable chance to survive as a niche vendor, he said.

Cut to the quick

Results of query benchmarks written by the British Columbia Ministry of Health to compare IBM mainframe and MasPar MPP performance

Table data by category	260 million	16 hours	19 minutes
Extract records from database	148 million	24 hours*	49 minutes
Three-way join of multiple tables	8,000	10 seconds	3 seconds
Two-step extraction of data from larger records	46,000	2 minutes	6 seconds

*[illegible]

Source: MasPar Computer Corp., Sunnyvale, Calif.

System-back guarantee

Tyshynski said he found a sponsor from outside the information systems department to help sell the ministry on the MPP project. He was also able to show a three-year payback on the investment, which was a requirement "because of the nervousness about using this technology," he added.

As a final bit of insurance, Tyshynski persuaded BC Systems Corp., which handles data processing for the provincial government, to agree that the Ministry of Health could revert to database querying on the mainframe for free if the MasPar system was not up to snuff. "It was a basic put-your-money-where-your-mouth-is proposition," he said.

Final approval of the project came early this year, and the 4,096-processor MP-2 went on-line in August. The ministry currently has about 40G bytes of data stored in flat files on the MP-2, representing 185 million claim records from the past four years, according to Davis. The system is front-ended by a Digital Equipment Corp. DEC 5000 workstation, which channels data updates from the mainframe to the MP-2 and also runs the SAS software.

Mostly positive report

The prognosis after the first four months of system use was generally positive, although some complications that require further attention have arisen, Davis said.

Most queries run on the MP-2 in less than 30 minutes, allowing the ministry's 20 research officers to do "in a day or a half-day what used to take them a week," from writing a query to analyzing the extracted data, he said. As a result, they can look at individual claims and client profiles much more readily than before.

The SAS software also lets the research officers write more queries on their own rather than having to ask the IS department for coding help, Davis added.

"The research officers can now do their jobs, and the systems people are back to doing systems stuff," he said.

On the flip side, though, SAS is "a huge product," and training the research officers to use it has been a challenge in some cases, Davis noted. "A lot of change was thrown on their shoulders," and the users are still "anywhere from being experts to being able to muddle through," he said.

In addition, large and complex queries can still take seven or eight hours to run on the MP-2, "and some we just don't do because they take too long," he said. The ministry has indeed turned back to the mainframe, in some cases as a result of the slow performance on big jobs.

MasPar and BC Systems are trying to tune the MP-2 for better throughput on complex sorts and look-ups, Davis said. The ministry also hopes to get a performance boost by moving the SAS software to a separate Digital workstation once a DEC OSF/1 version of SAS is available in the next month or so.

"We're pushing the envelope more with the system, and we're encountering the issues of ramping it up," Davis said. "We're doing a lot of things that we couldn't do before, but we want to do more."

Wisconsin

CONTINUED FROM PAGE 75

new system promises a single and complete database in one format, Piper emphasized. He said the database will start at 350G bytes and will grow to 1T byte.

Layered on top of the Oracle database will be end-user query and analysis tools. An executive information system will give managers aggregate data, while a decision-support system for "data junkies" will let state employees drill down to individual claims and doctors for detailed investigation, Piper said.

Vendors of the analysis tools include Kenan Systems Corp. in Cambridge, Mass., and GMIS, Inc. in Malvern, Pa. Analysts use Compaq Computer Corp. PCs running Windows.

Another module will review the payments for prescription drugs and the final module — to be implemented in 1996 — will be an expert system for spotting fraud and abuse [CW, Sept. 13, 1993].

Wisconsin's Medicaid Evaluation and Decision Support project has the following elements:

- An **executive information system** and a decision-support system that will allow staffers to analyze all aspects of the Medicaid program, including expenditures, utilization, providers, recipients, quality of care, claims processing and operational statistics
- A **central on-line relational database** where virtually all Medicaid data will be stored
- A **drug utilization review system** to monitor the prescription drug use of 500,000 recipients
- An **expert system** to detect fraud and abuse

In general, the key benefit of the system will be to reverse the situation in which "analysts spend 90% of their time trying to get information out of the mainframe and only 10% using it," Piper said.

Now it takes "a tremendous amount of programming" to extract data reports from the mainframe system, and analysts may have to wait two or three months to get an answer, he added.

"We're sitting on top of a $2.3 billion gorilla — the most complicated social welfare program ever created — and the politics of the situation require that we find answers in minutes, not weeks," Piper explained.

Developing for the future

The most challenging part of the project is making sure the system is adaptable because the Medicaid program is constantly changing, he said. Therefore, it is important that analysts can view a wide variety of data elements in now-unforeseen ways. "We have to be careful not to lock out any data elements," Piper said.

The second challenge is to make sure the diverse group of state employees who can benefit from the new system — anyone from auditors and clinicians to contracting officers — will fully exploit its powers. "This is definitely not an incremental improvement; this is a quantum jump," Piper said.

No, this is not a
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PANEL CITES FLAWS IN IRS SYSTEMS PLAN, 86
NEW PRODUCTS, 87

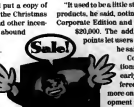
Database deals lure buyers down pricey path

By Kim S. Nash

Odds are that not too many people will put a copy of Oracle Corp.'s Oracle 7 package under the Christmas tree this year, but sales, promotions and other incentives to buy databases and related tools abound right now.

The trick is recognizing a true bargain.

Some promotions are clearly designed to get users to experiment with one product and then coax them to buy more expensive add-ons or related offerings. Gupta Corp., for example, employed that tactic with this summer's SQLWindows Solo giveaway.



By calling an 800 number, developers received a free copy of Solo, a single-user version of Gupta's client/server development tool kit. The promotion was meant to give users a taste of Gupta products and inspire add-on sales, according to Phil Ressler, vice president of corporate marketing.

Climbing aboard

Anecdotal evidence shows that users — and their pocketbooks — are being drawn in, said Kevin Barnhill, founder of the Florida Gupta Users Group. Barnhill said he has noticed an uptick in the number of corporate and third-party developers evaluating Gupta products.

"It used to be a little steep for users to get into" Gupta products, he said, noting that a full-boat SQLWindows Corporate Edition and related tools could cost up to $20,000. The addition of Solo and other price points let users buy into Gupta more gradually, he said.

Computer Associates International, Inc. was among this year's early wheeler-dealers when it offered fresh price cuts of 50% and more on the Ingres database and development tools it acquired from The ASK Group, Inc. in July [CW, Sept. 12]. But to get the lower prices, users must buy products in certain predefined bundles called OpenIngres Success Packs.

Meanwhile, rivals have rallied with discount programs intended to lure Ingres users to other databases. For example, Informix Software, Inc. announced last month a dollar-for-dollar credit to Ingres users looking to jump ship. The plan lets users "trade in" the amount of money they have spent on Ingres database and development products for similar wares from Informix. Migration consulting is included in the program.

Oracle last week stopped offering Ingres users discounts on license fees for the Oracle 7 database and Cooperative Development Environment tools.

However, those products are specifically excluded from another Oracle migration program. On the financial and manufacturing applications side, users can get a discount from Oracle of up to 50% of the license fees they originally paid to ASK for Manman or Manman/X applications. That deal, which tops out at a discount of $500,000, is available through the end of this month.

Competitive upgrade

Oracle's new Oracle for Windows database will be priced at $200 when it ships this month — but only for people who send in the title page of a competing product's documentation manual.

One caveat: Aftermarket maintenance is not included in the deal.

One sale slated to expire before Dick Clark's New Year's Rockin' Eve ends is Sybase, Inc.'s $9,995 special on Replication Server, an add-on product that synchronizes remote SQL Server databases.

Would-be buyers should note, however, that to get the discount, they must purchase Replication Server with a 100-user version of Sybase's Workgroup SQL Server database. That product costs $19,995.

Integrated budgeting may brighten holidays for Ames

By Thomas Hoffman
ROCKY HILL, CONN

Behind the frantic scenes of the holiday rush, Ames Department Stores, Inc.'s fiscal 1995 budget preparations are quietly under way — and going smoother than ever. That's because the $2.2 billion discount retailer recently developed a budgeting system to link a variety of departments and streamline the budget reporting structure.

Ames' financial systems staff recently put the finishing touches on a two-year effort to create an integrated budgeting system. The DOS-based system, which took eight months to develop, was designed using Computer Associates International, Inc.'s Clipper Version 5.2 application development environment.

Easing the crunch

The system has helped Ames' treasury department reduce the amount of time it spends collating data from various departments. The department has used the additional time to analyze the figures more intensively and stay on schedule with its budgeting cycles.

ON SITE

Ames Department Stores, Inc.
Rocky Hill, Conn.

Challenge: To integrate multiple departments with a common budgeting system.

Technology: Computer Associates' Clipper Version 5.2 application development tool set.

Results: Treasury staffers spend less administrative time collating budget data. This enables them to spend more time analyzing the data.

Also, the new system has "helped to speed up some budgeting components this year, such as the inclusion of on-line itemization," said Gary A. Compasso, director of financial systems at Ames.

In the past, staffers in Ames' treasury department had to input all the budget data from other departments — such as real estate, human resources and accounting — onto PC disks. Although corporate departments were able to post their budgetary projections on the disks, transmitting the data to a common reporting mechanism was cumbersome and time-consuming.

Lean and mean

The budgeting system represents the first time Ames' 20 disparate file servers have been joined by a common application. Ames is using a mix of IBM PS/2 servers, AT&T Global Information Solutions' Tower minicomputers and two Hewlett-Packard Co. 486-based processors.

The development effort was aided by a recently constructed 16M-bit corporate backbone consisting of IBM bridges and servers that connect a mix of workstations to the home office.

Under the new scheme, Ames' departmental budget figures are sent from their PCs over Novell, Inc. NetWare LANs and are uploaded to the company's CA-Masterpiece accounting package that resides on the company's IBM 3090 mainframe.

The retailer could certainly use some help with its numbers. In its third quarter, which ended Oct. 31, Ames' 306 outlets reported a 2% decline in same-store sales, a barometer most retailers use to gauge financial health.

Gary A. Compasso, *Ames' director of financial systems, lauds the company's streamlined budgeting system*

Although Ames emerged from Chapter 11 bankruptcy protection in December 1992 and has posted a modest profit this year, industry pundits remain wary about the retailer's future.

"The whole discount industry is under tremendous pressure because of the success of Wal-Mart and the fact that most department stores overexpanded due to poor business rationale in the 1980s," noted Thomas Friedman, editor and publisher of "Retail Systems Alert," a monthly industry newsletter in Newton, Mass.

Perhaps a series of continued successes will help put the retailer back on track. Users in Ames' treasury department said the system has been a salvation for them.

"The whole budgeting process this year has been made much easier with the new system," said Marcia Winn, a senior financial analyst in Ames' treasury department. "Now, we have an entire audit trail that we can search back through."

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POWERSOFT BUSINESS PARTNER CODE

Development Environment.

Panel cites flaws in IRS systems blueprint

By Gary H. Anthes
WASHINGTON

Actions taken by the Internal Revenue Service to improve its Tax Systems Modernization (TSM) program are necessary but not sufficient to ensure the project's success, according to a National Research Council committee.

The committee pointed to several improvements the IRS has made, some in response to earlier committee reports. For example, the IRS has developed a business vision document and a plan for reorganizing processes and people, created an architect's office staffed with experienced systems developers and begun to use "technology refreshment" clauses in contracts to reduce purchases of obsolete technology.

However, the committee "continues to have very serious concerns about the IRS' ability to successfully complete, on time and within budget, all of the TSM plans as currently defined."

IRS CIO Henry Philcox: *Report 'does not reflect anything that surprises us'*

In particular, the committee said the IRS must improve its ability to do the following:

- Define the overall architecture of TSM.
- Adapt to and incorporate evolutionary changes in technology.
- Manage a large number of related tasks over a long period of time.
- Adapt to changing funding levels.
- Develop a mature software development organization.

"It is very clear that development of a complex system like this involves a lot of organizational changes," said Peter Freeman, a member of the National Research Council's Committee on Continued Review of the TSM of the IRS. "Initially, the IRS had the idea that they were going to develop a new system but that they wouldn't much change the way they do business."

Now, Freeman said, the IRS has begun to address fundamental business process and organizational changes as part of the systems effort.

Freeman, who is dean of computing at the Georgia Institute of Technology, was less complimentary about the tax agency's project management practices. "It is not a pretty picture," he said.

In particular, the committee faulted the IRS for its lack of a comprehensive systems architecture, or software structural description (SSD), for the $7 billion TSM. "Without an SSD, it is impossible to evaluate the architecture or the design of a software system," the committee said in its report.

But Henry H. Philcox, the IRS' chief information officer, said the architecture for systems as they will look in 2001 is under development and due for delivery by the end of the year. Then, "transitional SSDs" will be developed for each of the years between 1995 and 2001 to give snapshots of the systems as old software is phased out.

The National Research Council report criticized the IRS for not making contingency plans to deal with possible permanent cuts in the agency's information systems budget, something that may be more likely now that the Republicans have surged to power on Capitol Hill. The report said the TSM budget was cut from $989 million to $650 million for fiscal 1995, which began Oct. 1.

Philcox said he views the cut as a temporary setback that will delay completion of TSM by a year. But he expects Congress to approve a fiscal 1996 budget that restores spending levels. "Newt Gingrich, for one, has been quoted as saying that government has not been adequately funded for technology," he said.

[redacted]

Metasolv Software, Inc. has announced Application Security Library 2.1, an add-on tool to Metasolv's PowerFrame product line. .

According to the Dallas company, Application Security Library 2.1 provides security to applications developed with Powersoft Corp.'s PowerBuilder.

The Security Administration Library manages secured objects and authorizations, and the Security Implementation Object links the applications to the Security repository.

Application Security Library costs $1,495 per server.

▶ *Metasolv Software*
(214) 239-0623

Qualix Group, Inc. has announced Smart DB WorkBench, a tool set for implementing Oracle Corp. database applications.

According to the San Mateo, Calif., company, Smart DB WorkBench includes SmartLoader, SmartXray, SmartQuery and SmartDesigner.

SmartLoader provides data conversion and data loading without coding; SmartXray reveals the schema of the database for any operation; SmartQuery lets users verify, update and delete data; and SmartDesigner lets users make changes in the database schema.

Smart DB WorkBench costs $16,000 for the four-user product suite.

▶ *Qualix Group*
(415) 572-0200

AutoTester, Inc. has announced Test Station 2.1 and Test Library Manager 1.0, testing software for PC- and host-based applications.

According to the Dallas company, Test Station 2.1 automates the creation, execution and documentation of software tests.

The product edits tests while the user is on-line within the application and is integrated with leading development tools.

Test Library Manager 1.0 complements Test Station by providing a centralized database of test cases, simplified test case maintenance and version control of all test library files.

Test Station 2.1 costs $5,000, and Test Library Manager 1.0 costs $15,000.

▶ *AutoTester*
(214) 368-1196

VisualTools, Inc. has announced Formula One 2.0, a Microsoft Corp. Excel-compatible spreadsheet tool for Windows developers.

According to the Lenexa, Kan., company, Formula One 2.0 lets developers create applications that require complex spreadsheet functionality.

The product provides a link to VisualTools' First Impression charting tool and includes a calculation engine optimized to make spreadsheet applications run fast.

Formula One 2.0 costs $249.

▶ *VisualTools*
(913) 599-6500

Mercury Interactive Corp. has announced LoadRunner/XL and LoadRunner/RTE, multiuser system and performance testing tools for client/server applications.

According to the Santa Clara, Calif., company, the tools give users an accurate view of an application's functionality and performance under peak load conditions. The products can synchronize multiple user actions to test for data integrity.

LoadRunner/XL tests database servers and simulates a large number of clients interacting with the server. LoadRunner/RTE tests a terminal-based application by creating thousands of terminal-based virtual users.

Prices for LoadRunner/XL and LoadRunner/RTE start at $30,000.

▶ *Mercury Interactive*
(408) 987-0100

Product short

Stylus Innovation, Inc. has announced that Visual Voice, Stylus' telephony software tool kit, supports IBM's Mwave technology. The product uses Mwave's telephony and fax capabilities to let users build single-line phone applications. A Virtual Phone feature simulates phone and fax functions during development. Cost: $495. Stylus Innovation, Cambridge, Mass. (617) 621-9545.

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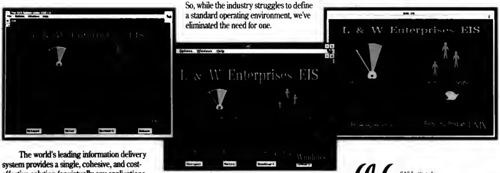

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INSIDE:
Books to please that hard-to-shop-for techie
See page 97

'Twas the Month Before Christmas...

... and all through the land, the nation's mass retailers are calling on IS to help them make the most of this make-or-break profit season. More than any other time of the year, it's a period when IS must truly shine.

By Julia King

THE FIVE-WEEK HOLIDAY SHOPPING season that officially begins the day after Thanksgiving can make or break most retailers. Behind each and every ring of the cash register are forecasting, inventory, distribution, point-of-sale (POS), credit authorization, even weather-tracking systems to help retailers make the absolute most of their once-a-year megaopportunity in the marketplace.

For information systems, 'tis the season of ultrahigh visibility. Successful systems performance can make for some shining moments of efficiency and translate into gold-clad examples of high return on IS investments.

On the other hand, IS is at its most vulnerable. What may be a small glitch in June spells major disaster in November and December when large department stores, small specialty shops, catalog operations and most other retailers post an average 40% of sales and between 60% and 70% of annual net profits.

In November and December, most large department stores, small specialty shops, catalog operations and other retailers post an average 40% of sales and between 60% and 70% of annual net profits.

Kent Hanson

Talented IS staff is the key for a successful holiday season, says Rick Kish, vice president of information technology at Waldenbooks

Jim Miller's anxiety level usually starts to rise just after Halloween. The surge corresponds with final preparations for greeting card manufacturer Hallmark, Inc.'s busiest selling season.

Between late October and Jan. 1, the Kansas City, Mo., company will stock and continually replenish the racks of some 13,000 retail outlets with Thanksgiving, Christmas, Hanukkah and New Year's cards from its line of some 40,000 different designs. Most orders will be generated from POS data, which also drives production, distribution and next year's product development.

"The idea of executing thousands of transactions on a daily basis, making sense of hundreds of requests for shipments, manipulating data and making sure distribution centers send out what they're supposed to is what I have the most anxiety about," says Miller, Hallmark's vice president of information technology.

For Hickory Farms, Inc.'s former Chief Information Officer Ron Koestner, the biggest worry during the holiday rush is communications breakdowns. The $150 million specialty food retailer in Maumee, Ohio, rings up more than 80% of its annual sales in November and December. "A systems failure during peak season can cost $1 million a day," Koestner says.

And at Toys R Us, Inc. in Rochelle Park, N.J., systems that support the terminals customers use to scan prices and check electronic gift registries are what keep Eileen Gabriel up at night.

Christmas, *page 92*

Christmas

CONTINUED FROM PAGE 91

"We do approximately one-half of our business between Thanksgiving and Christmas. I lose sleep over the systems that directly affect customers," says Gabriel, vice president of IS for the 1,000-store chain.

"IS is extremely critical to every segment of retail today," says Ken Morris, a partner at Customer Focused Technologies in Sarasota, Fla., and former vice president of IS at May Department Store Co.'s Filene's division in Boston and Lord & Taylor in New York.

"Unless you work in retail, you don't realize what the season means," Morris explains. "MIS works like crazy between year's end and Nov. 15 to put in systems that sometimes do 75% to 80% of retailers' business in a 30-day stretch. Then, during that 30-day period, every muscle is exercised."

Making it work

"The stress level goes up, but we take greater pride in meeting our deliverables during these six weeks than at any other time," says David M. Carlson, former senior vice president of corporate IS at Kmart Corp. in Troy, Mich., who now works on special projects for the company. Kmart processes an average of 20 million summary transactions a day during the holiday crunch. On Friday mornings in November and December, weekly four-hour sales at 2,300 stores have been known to increase system and network traffic by a factor of 50, Carlson says.

To minimize the risk of system disruptions, Kmart's IS places a moratorium on system changes between mid-November and Christmas. Four or five years ago, Carlson says, IS had a "very close call" with disaster when it made what it thought was a small change in some communications software in the latter part of November.

"Under normal volume considerations it probably would have been almost unnoticed," Carlson says. "But all of a sudden our communications infrastructure slowed down, and there was an alarming increase in backlog of communications headed to stores. We had three or four days of high anxiety. Nobody jumped off a building, but we used every problem-solving technique and resource we had to solve that. Those were an exciting few days," he recalls.

Before the annual moratoriums, final market testing is performed on Kmart's massive sales and order processing systems, which conduct hourly sweeps of POS data from 50,000 store-based terminals.

Reports based on current POS data mean Kmart's merchandise buyers can replenish hot-selling items on a store-by-store basis. Bedtime Barbie may be a big seller in Boise, Idaho, but Saginaw, Mich., shoppers are keen on Soft Stuff Potato Heads. During the past decade, Carlson says Kmart has invested $1 billion in IS that allows its buyers to base new orders on sales data less than three hours old. This enables buyers to get hot products when and where they're in demand.

* * *

"The idea of executing thousands of transactions on a daily basis, making sense of hundreds of requests for shipments, manipulating data and making sure distribution centers send out what they're supposed to is what I have the most anxiety about."

— Jim Miller,
vice president of
information technology,
Hallmark,
Kansas City, Mo.

* * *

Let it snow, let it snow . . .

Kmart buyers also have the benefit of knowing things such as when and where major snowstorms are due to hit. Data generated by a long-range weather forecasting system enables Kmart to better understand the seasonal component of product demand.

"Weather affects us a huge amount, and we're trying to use some advanced weather-forecasting techniques to do a better job of predicting what weather-related items will sell when and where," Carlson says. Using a third-party software package for long-term weather forecasting, Kmart has been able to identify some weather-related retail patterns, but work in this area has only just begun, he says.

"If we know that the first two weeks of September of next year are likely to be rainier than those weeks last year in northern Florida, and we know that sweaters sell more under those conditions, we can do a better job of being in-stock on sweaters," he explains. "As we drive technology closer and closer to the business, we can actually see technology impacting customer service."

At Hickory Farms, the 17-person IS team already knows to expect their heaviest crunch in the two weeks preceding Christmas day. That's because year after year, "most people wait until the 15th or 20th of December [to place catalog orders], then ship overnight. We'd ship 3 million gifts in a two-week time frame," Koestner says.

To speed up the delivery process, the company has established electronic links with overnight shippers such as Airborne Express in Seattle. Hickory Farms also sends shipments via FedEx Corp.

Christmas, ***page 96***

* * *

"We do approximately one-half of our business between Thanksgiving and Christmas. I lose sleep over the systems that directly affect customers."

— Eileen Gabriel,
vice president of IS,
Toys R Us,
Rochelle Park, N.J.

* * *

The Gift That Keeps On Giving

Once mass retailers survive the hectic holidays, the data they have collected during that period is a major manufacturing and marketing tool for the remainder of the year

POS data that retailers collect during the all-important holiday shopping rush remains highly valuable well after the last Christmas cards have been marked down and moved out.

In fact, "the real value of information systems is to provide alternative selling opportunities when sales are slow," says Ken Morris, a partner at Customer Focused Technologies.

For instance, an application might integrate data such as customers' birth dates with their size, favorite color and fabric preferences. When business is slow, sales clerks could place highly targeted telephone calls to let shoppers know what's on sale and whether their size is in stock.

"The famous black book in retail is the one that every smart, savvy salesperson has," Morris says. "It has all of their clientele in it. What's happening now is that individual salesperson's initiative is being automated and institutionalized."

For the most part, the automated black book systems are date-driven, Morris says.

"A salesperson can key in next week's dates and get a listing of phone calls for the next week," Morris explains. Getting data into the system during the holidays is especially important because of the huge volume of information that can be accrued during this period. More shoppers means more data, which in turn means more telephone calls that can be made during lulls in business over the rest of the year.

Filene's, where Morris formerly served as vice president of IS, began its automation efforts in 1986. He says other frontrunners to have developed systems in the last few years include combination catalog/store-based retailers such as J. Crew in New York and The Talbots in Hingham, Mass. By integrating information about customers who shop both by catalog and in stores, these companies have been successful in identifying key customer preferences.

Now, Morris says, other IS organizations in the industry — driven by cutthroat competition and increasing pressure to show return on IS investments — are beginning to step up their efforts in this area. Several specialty store clients are now in the process of automating their black book function, he says.

The bottom line, Morris adds, is that all retailers must know their individual customers and know them well if they want to be around for the next holiday season. *—Julia King*

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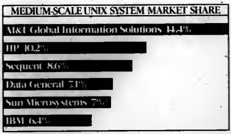

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GET move USE IT.

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Christmas

CONTINUED FROM PAGE 92

Hickory Farms uses a system provided by Airborne to print Airborne labels and bar codes. As Hickory Farms scans packages, the system passes weights, electronic manifests and other information right into Airborne's systems so Airborne knows what it has coming and can plan flights, Koestner explains.

For the first time this year, the local U.S. post office in Maumee will also receive Hickory Farms' shipping manifests electronically.

"We talked the post office into buying a new system so they could receive data electronically," Koestner says. "In years past, a couple of people from the post office validated shipments [manually] as things went on the truck. I doubt they'll have near as much validating now."

In addition to its catalog business, Hickory Farms also sells its line of fruits, nuts, chocolates and other food items through 700 seasonal "center court" stores. Set up in malls and other shopping centers during the holiday shopping crunch, the outlets use cash registers rather than electronic POS terminals. Information about what's selling is not available in summary form on a daily basis as is the case with information from permanent stores.

Another stress point for Hickory Farms during the holidays is the payroll system. Seasonal stores mean an upturn in employees, which in turn mean additional payroll transactions, Koestner says. The company could cut 10,000 payroll checks in a week during the season, as opposed to a week in May or June when it cuts 100 fewer checks.

Eventually, Hickory Farms intends to have on-line POS data available from its seasonal stores. But for now, POS data from its approximately 150 permanent outlets and demand forecasts will continue to drive the company's July through October production schedule. This information will also drive product shipments from 40 warehouses nationwide. For the last three years, all of this data has been processed by Advantis, a Dallas outsourcing company.

One of the retailer's weakest links has been having its mainframe in Dallas when its headquarters is in the Toledo, Ohio, area, Koestner says. To strengthen that link, it has taken an extra-cautious approach to data communications.

"We'd have one line to [Advantis] during the regular year. During the season, we'd have three lines from three different cities connected separately through the Dallas/Fort Worth area, so if a telephone substation goes down, we'd still have access," he says.

High anxiety

For many retailers and mass merchandisers, the holiday season puts IS to the ultimate test of efficiency and endurance. The stakes can be staggering.

Company	Merchandise	Outlets	IS challenge
Hallmark	Greeting cards (40,000 designs)	13,000	Thousands of daily transactions
Hickory Farms	Specialty foods	150 permanent 700 seasonal	80% of annual sales and 3 million transactions in two weeks
Kmart	Discount retailer	2,300	20 million daily transactions 50,000 POS terminals
Sears	Mass retailer	1,000+	25,000 daily deliveries
Toys R Us	Toys/Clothing	1,000	50% of annual sales
Waldenbooks	Books	1,200	New POS system

Source: Company IS executives

Two years ago, Koestner says he had a close call when an MCI Communications Corp. line was accidentally cut somewhere outside of Hickory Farms. "It was a critical situation, but not quite as bad as it could have been. We switched to a firm in Denver to take orders, but we weren't on-line."

Additional outbound telecommunications lines are also a part of Chicago-based Sears, Roebuck and Co.'s seasonal IS strategy. In many markets, Sears guarantees next-day delivery of appliances and other items ordered before 5 p.m. The process behind that promise involves Sears personnel calling customers the night before to verify information on the 25,000 daily deliveries the company may make in the weeks leading up to Christmas.

However, a far bigger challenge for IS is keeping the company's price management and credit authorization systems up and running smoothly. This is especially tough on special sale nights when overall transaction volume can increase fivefold.

"We carry over 1 million items at over 1,000 locations. Keeping price files up to date can involve making up to $1 billion in price changes on a sale night," says CIO Joe Smialowski.

To support the high volumes, Sears has increased its mainframe computing power to roughly 2,000 MIPS. At stores, DOS-based POS terminals are linked to two IBM PS/2 processors. The company also operates more than 150 Unix-based application servers, which are scattered across distribution sites and Sears' three main computer centers in Schaumburg, Ill., Dallas and Columbus, Ohio.

Sears, similar to most other retailers, builds its systems expressly with the high-volume Christmas season in mind. "We formally go through stress testing to verify that we can support upcoming volume estimates," Smialowski says.

Given the diverse high-volume computing environment, "there are so many things that could happen," Smialowski acknowledges.

Price changes also are a major issue at Waldenbooks, Inc. in Stamford, Conn., which operates about 1,200 retail outlets nationwide.

Shelf space is at an all-time premium at the 3,000-sq.-ft. stores, especially during the holidays. "So whenever books take off that you don't expect to, or books die, you have to get them on or off the shelves very quickly," says Rick Kish, vice president of information technology.

This year, store staffers will be using a new inventory system that incorporates laser data terminals (LDT) to speed the markdown process as well as several other inventory-related functions. The system was developed specifically with this year's holiday rush in mind. Work on it began just after last year's holiday rush was over.

Before the system was fully rolled out in September, store clerks manually changed prices on individual books, based on twice-monthly, paper-based summary reports from corporate headquarters. The process was tedious and time-consuming, taking one clerk an average of 12 to 14 hours at each store.

The LDT system, by contrast, downloads price changes from Stamford directly to a store-based PC and handheld scanning device. It allows clerks to simply scan books to change prices.

Is Kish apprehensive about the system's first holiday workout, which begins in just a few weeks?

"We [in IS] have been through the fire now a number of times," Kish says. "If you have talented systems people, it makes all the difference in the world. I don't have any major fears going into Christmas because we've pulled it out before." ■

"Unless you work in retail, you don't realize what the season means. MIS works like crazy between year's end and Nov. 15 to put in systems that sometimes do 75% to 80% of retailers' business in a 30-day stretch. Then, during that 30-day period, every muscle is exercised."

— Ken Morris, partner at Customer Focused Technologies, Sarasota, Fla.

Demands of the season

Kmart processes an average of 20 million summary transactions a day during the holiday crunch. On Friday mornings in November and December, weekly four-hour sales at 2,300 stores have been known to increase system and network traffic by a factor of [illegible].

Get it while it's hot

During the past decade, Kmart has invested $2 billion in IS that allows its buyers to base orders on sales data that is less than three hours old. This enables buyers to get hot products when and where they're in demand.

King is *Computerworld*'s senior editor, Mid-Atlantic bureau.

On the first day of Christmas, my manager gave to me . . .

SEVERAL NEW BOOKS THAT CAN SOLVE THE PROBLEM OF WHAT TO GET THAT HARD-TO-SHOP-FOR TECHIE

By Candee Wilde

Information systems employees looking for some good books to curl up with on a long winter's night have several new titles from which to choose.

From client/server to consulting, virtual reality to the cartoon world of Dilbert and Dogbert, the variety of new book offerings is guaranteed to offer something for even the most hard-to-please techie and manager.

So if the holidays hold promise of some quality reading time, here are select offerings that can help round out your holiday wish list.

How to be a Successful Computer Consultant

(Third Edition)

BY ALAN R. SIMON

(New York: McGraw-Hill, Inc., $19.95, 267 pages)

Ready to share tidings of computer comfort and joy with others? Do you feel stifled in your corporate IS environment or anxious you'll find a pink slip in your Christmas stocking? If so, your guiding star could be beckoning you toward the path of computer consulting, and this book can help show you the way.

From naming a new practice to developing services, finding clients and setting fees, *How to be a Successful Computer Consultant* can help would-be entrepreneurs avoid some of the common pitfalls that threaten a new enterprise. Essential small business skills, such as financial record keeping and time management, are covered in detail.

Alan R. Simon has completely revised this handbook, first published in 1980, to cover new technology and changing market conditions. New material covers expanding the existing enterprise, networking standards, open systems, working in client/server environments and using object-oriented technology.

The chapter on preparing a business plan is well organized and will help technical specialists through potentially unfamiliar terrain such as market research and analysis, evaluating risks and seeking financing. All in all, this book could be the perfect gift for the IS whiz who is ready to sally forth and test the consulting waters.

The Virtual Reality Primer

BY L. CASEY LARIJANI

(New York: McGraw-Hill, Inc., $40 hardcover, $24.95 paperback, 274 pages)

The problem with getting a grasp on virtual reality technology is learning to distinguish what is real and what is virtual in the field itself. But don't fret. L. Casey Larijani guides you through this Roger Rabbit mix of what is and what could never be.

And this is no expose on Mommy kissing Santa Claus. Larijani has taken a hard look at how virtual reality can be applied in such fields as medicine, architecture, entertainment, manufacturing and education.

The author begins by describing the converging computer technologies that are creating "a cartoon world you can get into." But the potential of virtual reality is still very unclear, she says. While France, Germany and Japan have all made resources available for virtual reality research, developers are having a difficult time securing research money and government support in the U.S.

MIS Manager's Appraisal Guide: Practical Guidelines and Forms for Evaluating and Appraising Your MIS Staff

BY LOCKWOOD LYON AND FRED GLUCKSON

(New York: McGraw-Hill, Inc., $39.95, 290 pages)

If conducting year-end performance appraisals makes you feel like Scrooge, a copy of this book might restore some holiday cheer.

Lockwood Lyon and Fred Gluckson have written a guide to help IS managers evaluate the Bob Cratchets in their charge. But to judge their performance, managers must first understand exactly what their employees do. Bah, humbug, you say? Don't scoff. As systems become more specialized and complex, this dilemma arises with surprising frequency.

Lyon and Gluckson have therefore composed a practical, detailed and wide-ranging guide to help managers overcome this problem and conduct useful employee evaluations.

Their advice: Base what employees get on what you see. Concentrate on observable and measurable activities rather than more general qualities, such as dependability, attitude or devotion.

And beware the temptation to combine the spirit of Christmas past with the spirit of Christmas presents. The authors warn that the common practice of lumping the appraisal and discussions of raises and bonuses together is a mistake.

"The performance appraisal is a time for discussion of job effectiveness, not financial reward," they say.

Shave the Whales

BY SCOTT ADAMS

(Kansas City, Mo.: Andrews and McMeel, $8.95 paperback, 128 pages)

If you're convinced your boss is really *The Grinch Who Stole Christmas*, you'll no doubt want to get a copy of Scott Adams' *Shave the Whales*. Whether you're an IS executive, a midlevel manager or a systems analyst, you're sure to find yourself represented in the pages of this latest Dilbert and Dogbert offering.

Dilbert comic panels have quickly become the cubicle decor of choice among IS professionals, and Adams continues his irreverent look at techies and technology in his fourth Dilbert book. *Shave the Whales* reprints many of the more popular strips from the Dilbert series while offering many new episodes.

This selection provides a wonderful change of pace from the serious business titles on the wish list and is a must-read for IS managers who want to know how their staffers really view them.

Leadership and the Customer Revolution

BY GARY HEIL, TOM PARKER AND RICK TATE

(New York: Van Nostrand Reinhold, $24.95, 256 pages)

Don't look for a herald angel to show you the way to competitive advantage — you'll quickly discover there is no single path to success.

Many have chosen to follow well-worn paths, discovering too late that they've gone the wrong way, say authors Gary Heil, Tom Parker and Rick Tate in *Leadership and the Customer Revolution*. The solution is to completely revolutionize your approach to your customers. Anything less will lead to competitive failure.

Organizational structures — and how and why they can be changed — are the focus of the early chapters of the book, followed by a general analysis of customer needs. The final section of the book concentrates on managing people in a restructured, but not necessarily downsized, organization.

The authors decry downsizing as a flawed, short-term strategy. Their view: It bleeds vitality from an organization at a time when imagination and foresight are needed most.

Competing for the Future: Breakthrough Strategies for Seizing Control of Your Industry and Creating the Markets of Tomorrow

BY GARY HAMEL AND C. K. PRAHALAD

(Cambridge, Mass.: Harvard Business School Press, $24.95, 336 pages)

Many successful companies have had long-range visions come to them upon a midnight clear. And they've shared the wondrous joy with their employees at all levels. The real challenge is taking the next evolutionary step and shaping the future to their advantage.

That is the conclusion drawn by authors Gary Hamel, professor of strategic and business management at the London Business School, and C. K. Prahalad, professor of business administration, corporate strategy and international business at the University of Michigan's graduate business school, in their new book, *Competing for the Future*.

In more than 17 years of working together as consultants, the authors have found that managers of highly successful companies "often referred to amazingly ambitious goals — goals that stretched far beyond the temporal bounds of typical strategic 'plans.'" To achieve their goals, these companies often reshaped the "rules of engagement" for competition in their market to create some new advantage for their company's skills and products.

Competing for the Future can be used, the authors say, as a "handbook for those who believe the best way to win is to rewrite the rules." ■

Wilde is a free-lance writer in Easton, Conn.

SYNOPTICS + WELLFLEET

Bay Networks

Calendar

JAN. 15-21

First Annual Mobile Communications '95 Conference. Dallas, Jan. 16-18 — The conference will address North American, European and Pacific Rim regions, marketing strategies used in these regions and regulatory and legislative matters aimed at mobile equipment vendors and service providers. Contact: Frost & Sullivan, Inc., Santa Clarita, Calif. (800) 256-1076.

1995 Usenix Technical on Advanced Computing Systems. New Orleans, Jan. 16-20 — Contact: Usenix Association, Berkeley, Calif. (510) 528-8649.

SoftExpo '95. San Jose, Calif., Jan. 17-19 — The conference will focus on business and technical issues facing software firms. Sessions include product development, marketing and sales, technical support, customer service, translation or "localization," finance, packaging and manufacturing. Contact: Mark Cramer, Expomasters, Englewood, Calif. (303) 771-2000.

Mobile Outlook on Communications and Computing. Atlanta, Jan. 18-20 — The three-day conference will focus on how to integrate mobile systems into a fixed computing environment, how much of what is now in place must change to permit remote access, how and when to make required hardware and software modifications and why some promising pilot programs succeed while others fail. Contact: David A. Kaminer, Kotch & Poliak, Inc., New York, N.Y. (212) 486-8186.

JAN. 22-28

ComNet '95 Conference & Exposition. Washington, Jan. 23-26 — Products and technologies to be exhibited on the show floor will include the following: internetworking hubs, bridges, routers, gateways, modems, network applications, databases, private branch exchange-to-computer applications, multimedia, videoconferencing, LANs, servers, adapters, wiring, backup and network services, local and long-distance services, mobile computing, portable and handheld computers, client software, wireless data services, network management and security. Contact: IDG World Expo, Framingham, Mass. (508) 879-6700.

JAN. 29-FEB. 4

Special Libraries Association 1995 Winter Education Conference: Managing Information Technology. Raleigh, N.C., Jan. 29-31 — Contact: Special Libraries Association, Washington, D.C. (202) 234-4700.

Second Annual Display Manufacturing Technology Conference. Santa Clara, Calif., Jan. 31-Feb. 2 — Contact: Mark Goldfarb, Palisades Institute for Research Services, Arlington, Va. (800) 787-7477.

FEB. 5-11

Demo '95. Palm Springs, Calif., Feb. 5-8 — The conference will include product demonstrations, product premieres, head-to-head product showdowns, sneak previews and technical reviews. Contact: InfoWorld Editorial Events, San Mateo, Calif. (800) 633-4312.

Fourth Annual AS/400 Operations Automation User Conference. Phoenix, Feb. 6-9 — Contact: Help/Systems, Inc., Minnetonka, Minn. (612) 933-0609.

Process for Building an Effective Process Management and Standards Program. Orlando, Fla., Feb. 6-9 — Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

Decorum '95 Conference. La Jolla, Calif., Feb. 7-9 — The conference will feature several speakers and sessions in client/server, mission-critical deployments in the enterprise. Elaine Wolf, Transarc Corp., Pittsburgh, Pa. (412) 338-4400.

Conceppts '95: The Prepublishing Conference and Exhibition. Orlando, Fla., Feb. 8-11 — The conference will offer digital prepublishing technology users a program of 63 seminars plus a variety of special sessions. Contact: Graphic Arts Show Co., Reston, Va. (703) 264-7200.

FEB. 26-MARCH 4

SAC '95: 1995 Symposium on Applied Computing. Nashville, Feb. 26-28 — Contact: Jim Hightower, Association for Computing Machinery, Claremont, Calif. (909) 624-8902.

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FIRING LINE

HELP!! Who should you call for PC technical support?

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Could it happen to you? Yes, according to Dataquest, Inc. consultants. The technical support landscape is dotted with large competitors and smaller, very aggressive newcomers. Some are strongly forging ahead, some are merging, and others are just plain going out of business.

What does this mean to you? Ask yourself three crucial questions before you make your vendor selection:

- **How secure is the vendor?**
- **How much does the vendor know, technically or otherwise?**
- **What added business value can it offer?**

In three sections on the following pages, Dataquest consultants Robert Johnson (software) and Stephen Clancy (hardware) analyze what you should know when evaluating third-party PC support providers.

Users in each section tell their war stories and explain why they picked the vendors they are using.

Check it out. This report might save your company millions of dollars — or maybe just save you and your users countless hours of frustration.

ART VALERO

How secure is your vendor?

SOFTWARE

by robert johnson

Here today, here tomorrow? You'd better hope so. The most important question you should put to the test when selecting a third-party PC software vendor is: How secure are they? Checking the candidate's financing, staff levels, investment capabilities, management vision and shared objectives could save you a lot of time — which means money — in the long run.

The outsourcing market is a mix of very large competitors and smaller, aggressive newcomers. Last year alone, the average call volume handled by each third-party support provider grew from about 500,000 calls to more than 1.2 million.

As in any red-hot market, third-party software support will eventually cool off. When it does, some firms will survive while others will close or be acquired by other market players.

Some casualties this year: Abacus Global Support and International CompuAnswer both ceased operations. Imagine the fire drill their customers faced trying to meet their immediate support needs. One customer in the middle of a major upgrade dialed its vendor's support number, but no one picked up the phone.

Acquisition activity also adds an element of uncertainty. Competitor consolidation such as Sykes Enterprises with Computer Hand Holding and Keane, Inc. with Abacus will continue and may accelerate next year. Consolidation may not be bad for your business relationship and in some cases offers enhanced service delivery, more resources and better options. But any change causes some apprehension and is distracting.

Johnson is associate director of software services research at Dataquest, Inc. in Framingham, Mass.

WHY YOU SHOULD OUTSOURCE

The benefits of outsourcing your software support to a third party are clear:

- **Support delivery can be enhanced**
- **Costs can be reduced**
- **Quality of answers to questions, especially the more complex, multiproduct variety, improves**
- **Time will be freed up from researching technical solutions**

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USER PROFILE

by paul karon

You're in business for the long haul, and you want a technical support provider that's going to be there the whole way. But the explosion of third-party support businesses has added a dangerous wild card to the game.

Sure, start-ups are an important part of any industry — the newer companies are often hungry, ready to serve the customer and full of fresh ideas and talent. But they can also be a risky investment compared with the veteran vendors that have already demonstrated staying power.

For Lou Canale, director of customer and technical services at Government Technology Services, Inc. in Chantilly, Va., viability is critical. As a provider of office automation equipment and services to government organizations, Government Technology Services has responsibilities worldwide. The company needs a support vendor it can depend on — a vendor that can service distant geographical sites and whose technical background won't restrict Government Technology Services.

"The services we need range from basic hardware repair to network installation, services and customization," Canale says. "So we need a support company that's very broad in skills. We were looking for companies that were already established and had a worldwide organization in place," he says.

These are some of the main reasons Canale and his colleagues have retained IBM's software and hardware support services.

However, for the user, the question of a vendor's viability is more than a simple matter of survival as a company; it's also a question of the manner in which the company chooses to move forward and mature as an organization.

Does your vendor have a long-term view of its future and the future of the computer industry, and do those views match yours?

"We're looking for strategic relations with our support vendors," Canale says. "We need an organization that will not only meet our existing needs but will expand with us as we develop and change." ■

— Guide continues on page 105

Karon is a free-lance writer in Los Angeles.

About the user

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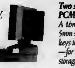

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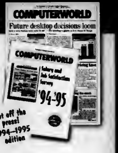

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   - 80 Manufacturer of Computers, Computer-Related Systems or Peripherals
   - 85 Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
   - 90 Computer/Peripheral Dealer/Dist./Retailer
   - 95 Other ____ (Please Specify)

2. **TITLE/FUNCTION** (Circle one)
   IS/MIS/DP MANAGEMENT
   - 19 Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
   - 21 Dir./Mgr. MIS Services, Information Center
   - 22 Dir./Mgr. Network Sys., Data/Tele Comm., LAN Mgr./PC Mgr., Tech Planning, Admin. Services
   - 23 Dir./Mgr. Sys. Development, Sys. Architecture
   - 31 Programming Management, Software Developers
   - 41 Engineering, Scientific, R&D, Tech. Management
   - 60 Sys. Integrators/VARs/Consulting Management

   CORPORATE MANAGEMENT
   - 11 President, Owner/Partner, General Manager
   - 12 Vice President, Asst. VP
   - 13 Treasurer, Controller, Financial Officer

   DEPARTMENTAL MANAGEMENT
   - 51 Sales & Mktg. Management
   - 70 Medical, Legal, Accounting Management

   OTHER PROFESSIONAL MANAGEMENT
   - 80 Information Centers/Libraries, Educators, Journalists, Students
   - 90 Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase. (Circle all that apply)
   Operating Systems
   - (a) Solaris
   - (b) Netware
   - (c) OS/2
   - (d) Unix
   - (e) Mac OS
   - (f) Windows NT
   - (g) Windows
   - (h) NeXTstep

   App. Development Products ☐ Yes ☐ No
   Networking Products ☐ Yes ☐ No

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30 Medical/Law/Education
40 Wholesale/Retail/Trade
50 Business Service (except DP)
60 Government - State/Federal/Local
65 Communications Systems/Public Utilities/Transportation
70 Mining/Construction/Petroleum/Refining/Agric.
80 Manufacturer of Computers, Computer-Related Systems or Peripherals
85 Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90 Computer/Peripheral Dealer/Dist./Retailer
95 Other ____ (Please Specify)

2. TITLE/FUNCTION (Circle one)
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23 Dir./Mgr. Sys. Development, Sys. Architecture
31 Programming Management, Software Developers
41 Engineering, Scientific, R&D, Tech. Management
60 Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
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Operating Systems
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(f) Windows NT
(g) Windows
(h) NeXTstep
App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No

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How much does your vendor know?

SOFTWARE

by robert johnson

Today's software technical support skills won't necessarily meet tomorrow's requirements. To deliver the level of service needed, third-party vendors must take on additional responsibilities so they understand how different pieces of technology fit and work together.

When you select a third-party software vendor, look beyond its ability to handle the most common applications on the "approved product" list. Look at how well it understands how to optimize technology performance, interoperability and the impact of ongoing innovation. Review where it intends to build future expertise and how much investment in training is present. Then decide if its philosophy on the most important technology issues matches your beliefs.

A Dataquest, Inc. survey of more than 20 third-party vendors reveals where these companies stand in terms of available technical skills across platforms, technology areas and software categories. Virtually all vendors support PC and Macintosh environments. But with so many environments consisting of a multiplatform mix, these capabilities may not be enough. To address customers' other platform needs, 43% of third-party vendors support mainframes, and 57% support midrange environments. But don't take that support at face value. Even if mainframe access were limited to data collection, storage and retrieval, there is a big need for adequate, ongoing support.

On average, third-party software vendors support 13 categories of software products, up from 12 last year. Make sure your vendor is not spread too thinly across too many areas.

Users should ask what categories will be supported in the future. For example, middleware may represent more than 50% of client/server software within a few years. What technical skills and diagnostic support tools are available for middleware support? And as software asset management moves to the front burner, how much does the vendor know about it?

Finally, look at a potential vendor's investment in training and how it intends to change it over time. On average, service providers invest 20 days in initial staff training and 28 days annually after that. From 1993 to 1994, the number of initial and ongoing training increased five to six days. This shows there is more to learn and understand each year.

Proper attention to a potential vendor's initial and ongoing training will help ensure better and more timely solution delivery.

HARDWARE

by stephen [illegible]

A hardware service organization without basic technical skills and experience isn't going to resolve many problems. This becomes even more critical in a multivendor environment requiring many levels of hardware service and support. So technical skill levels [illegible] fundamental [illegible] need to include [illegible]

- [illegible] hardware repair skills.
- Basic software-support skills to facilitate comprehensive hardware service [illegible]
- [illegible] advanced problem-solving [illegible]
- Most important, competence in leveraging a variety of new and growing technical support tools and resources.

Tool time

Services tools in the hardware support industry are among the most striking differentiators a vendor can bring to the table, according to a 1994 Dataquest report, "The Independent/Multivendor Services Marketplace: Strategies for Success."

The following are two basic hardware support tool categories to keep an eye on:

- Service management tools. Typically constructed in-house or purchased and customized from vendors, these tools are artificial intelligence/expert systems-based programs that reduce a vendor's need to dispatch personnel to the customer's site. The aim of these tools is to increase customer satisfaction by offering quicker, [illegible]
- [illegible] programs [illegible] ing problems remotely or on site.

CHECK YOUR VENDOR AGENDA

- Does your vendor handle more than common hardware environments or applications?
- Does it understand how to optimize technology performance?
- What technologies will it explore in the future?
- What are its investments in training?
- Does it understand interoperability?
- Can it effectively troubleshoot in multivendor environments?

USER PROFILE

by paul karon

If this were a perfect world, the bar would always be very high when it comes to measuring the technical skills of software and hardware support vendors.

Unfortunately, this is not a perfect world, as some have found.

"I've brought in three different types of custom software and buckets of off-the-shelf software, and in both categories I've run into no end of support people who say they know [the ins and outs of the product] but don't," says Don Johnson, founder of Max Recognition Corp. in Warner, N.H. "I feel like I've gone halfway to heaven when I find someone who knows what they're talking about."

About the user

[illegible]

What Johnson needs from a support vendor is what he calls systems-level knowledge — a comprehension of how all his hardware and software interacts.

"It's frustrating," he admits. "Sometimes I find myself spending a lot more time than I ever contemplated dealing with computer problems."

Although technical expertise is always one of the top considerations for users seeking to sign with a third-party support company, it's almost always the preeminent criterion for smaller organizations.

This is because smaller companies are typically more concerned with immediate tactical results and place less emphasis on sweeping strategic decisions that may take one, two or more years to show results.

"The important question is: Can I get through to them at any time of the day or night?" says Frank Deen, a partner at Alpha Systems, a financial management business based in Dahlonega, Ga.

"And when I do reach them, do they know the answer to the question I'm asking?" he asks.

These concerns led Deen to sign on with Software Support, inc. in Clearwater, Fla. ■

—Guide continues on page 106

About the user

[illegible]

YOUR EXPERTISE, PLEASE

What more can you get?

SOFTWARE

by bob johnson

It's easy for users selecting a third-party vendor to let technical issues make everything else seem unimportant by comparison.

Don't let that happen. Currently, most third-party vendors can tell you the following important statistics: the number of calls, average call length, average call wait, call abandon rate, call topics and solutions.

While this information has value, more than half of these vendors offer other reporting information as well. This is where value can be added to outsourcing relationships.

Look for added value

Look beyond the basic call data for other types of information that can build your understanding of your user community and its use of products. For example, reports can help determine areas in which end-user training is necessary as well as needs for additional products, documentation or changes in processes or procedures.

The goal is not to have a status quo relationship, in which you simply allow outside help to perform tasks formerly managed in-house, but rather to seek to widen the value delivered to users and add color to an otherwise black-and-white relationship.

Third-party vendors are paying more and more attention to expanding their service offerings. More than 50% of competitors offer custom applications development, dial-up databases, electronic-mail correspondence, electronic bulletin boards, fax-back services, newsletters, remote diagnostics and training. This represents a dramatic change from one year ago, when only E-mail, bulletin boards and training attained that level of availability.

However, don't be overly impressed by a lengthy list of can-do's from your vendor. Instead, find out how well the vendor will strive to understand your business and the needs of your particular users and to add value to your ongoing efforts.

ADDED-VALUE

More than half of all third-party software vendors offer the following goodies:

- **Custom application development**
- **Dial-up databases**
- **E-mail correspondence**
- **Electronic bulletin boards**
- **Fax-back services**
- **Newsletters**
- **Remote diagnostics and training**

[illegible]

[illegible] perspective [illegible] providers now have a [illegible] role in a user's business. [illegible] providers take on more [illegible] for the actual life cycle management of computing assets, the business view of the service provider [illegible]

[illegible] of [illegible] If an in- [illegible] hard- [illegible] methodology. [illegible] a hardware service provider [illegible] a winning service provider with a business focus on hardware [illegible] service that can bring cradle-to-grave asset management ideas to the table and fix stuff when it breaks, too.

Third-party support vendors have partnered with service providers for years. These relationships are too critical for technology vendors to [illegible] partnerships. [illegible] the partnership to [illegible] lengths, from including service technicians in internal vendor service organizations' [illegible] and [illegible] award programs to integrating the hardware service providers' field management team into their own service staff.

THE KEY ISSUES:

- **Achieve the highest return on hardware service relationships by leveraging the wide array of capabilities and resources found throughout a hardware service providers organization.**
- **Look beyond the traditional hardware service model.**
- **Maximize asset investments in technology with innovative life cycle management service.**

USER PROFILE

by paul karon

For information systems groups that support enterprisewide systems of sufficient size and technological scope, a critical concern is choosing a hardware or software support vendor that can provide strategic insights.

Because of its unique opportunity to view a company's information systems, a support provider is in the position to make proactive suggestions as well as provide immediate troubleshooting.

"What's important for me is that the support vendor know my business so they can come back to me and give me advice about how I can do something differently," says Ed Maurer, LAN administrator at Mitsubishi Motors Credit of America, Inc. in Cypress, Calif.

One key element of Mitsubishi's IS environment, for example, is that 90% of the company's mission-critical applications are on a mainframe — and the mainframe's SNA traffic is the top priority.

"It's important that a support vendor understands how critical my SNA traffic is in terms of my business," Maurer says. To be an effective help in his environment, he adds, a vendor must provide solutions that optimize the SNA traffic.

Joe Tabor, network project manager at Huntington Memorial Hospital in Pasadena, Calif., is interested in using his provider's insight into the types of computer problems in his user community.

The support vendor "can analyze and tally the types of calls they're getting and give us regular reports," Tabor says. "If we see the same questions repeated from various departments, then we can decide how we can address training."

This is crucial for Tabor, as his organization is moving from DOS-based software to Windows-based systems. And because departments can choose their desktop software, training is a concern. ●

About the user

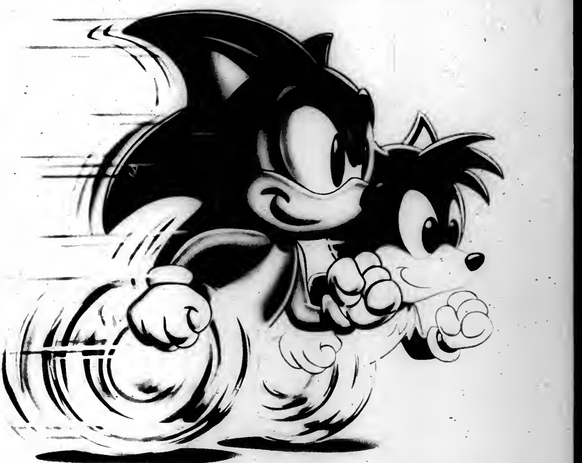
[illegible]

About the user

[illegible]

—Guide continues on page 110

GETTING TO KNOW YOU



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CA-Warehouse Boss is totally integrated warehouse management software for the AS/400. It acts as "the central nerve center" that tracks every detail from arrival through departure.

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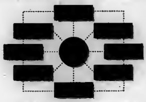

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Staying put

Ninety percent of 500 users of PC support services have not changed their support providers in the past year. Of the 10% who have switched, half have moved from one third-party firm to another. Only 14% went from direct suppliers to third parties, and 12% switched from third parties to direct. The major reason for switching: price.

Source: Buyers' Satisfaction Scorecard

Outsourced support

Cost savings and technical expertise are the Top 2 reasons 250 users said they outsourced their PC support to third-party firms. Of those, all but six of the companies said they would continue to outsource. However most of those surveyed said they outsourced less than 10% of their support coverage.

Source: Buyers' Satisfaction Scorecard

Challenges

The leading challenges faced by third-party support users include obtaining quality, building business knowledge, keeping providers in touch with their issues and staying informed of problem status.

Source: Buyers' Satisfaction Scorecard

Twice as nice

According to a recent Dataquest survey, almost twice as many customers expect to increase rather than decrease their hardware services spending.

Source: Dataquest, Inc.

Largest third-party support firms

HARDWARE

BASED ON REVENUE

AT&T Global Information Solutions	Dayton, Ohio (800) 225-5627	
Bell Atlantic Business Systems Services	Frazer, Pa. (800) 777-8800	
Digital Equipment Corp.	Maynard, Mass. (800) 354-9000	
Entex Information Services	Edison, N.J. (800) 227-3209	
GE Computer Service	Norcross, Ga. (800) 227-3209	GE Capital Technology Management Services provides multiplatform installation, maintenance and depot service, help desk, deskside support and logistics, test and measurement, equipment rental, repair and calibration.
IBM Hardware Technical Support & Services	Atlanta (800) IBM-SERV	Provides hardware technical services and support on products from more than 500 manufacturers. Base and enhanced pricing options are available.
Intelogic Trace	Long Beach, Calif. (310) 593-5433	
Vanstar Corp. (Computerland)	Pleasanton, Calif. (510) 734-4000	Standard hardware service offerings include Priority Service (annual contract fee), Shared-Security Support (annual contract fee plus a flat fee per call) and Basic Protection (fixed rate per call).

SOFTWARE

Control Data Systems, Inc.	Arden Hills, Minn. (800) 257-6736	SoftwareSOS: Control Data partners with client to provide support tailored to the needs of client's value-added resellers or external customers. Remote Help Desk Service: Assists, enhances or replaces the client's internal help desk.
Corporate Software	Canton, Mass. (617) 440-1000	Expert:Partner - Outsourcing End User Corporate Help Desk: Offers two outsourcing plans that allows customers to adjust their mix of internal and outsourced support as their needs change.
Digital Equipment Corp.	Maynard, Mass. (800) 354-9000	
Hewlett-Packard Co.	Mountain View, Calif. (415) 968-5600	
IBM Software Technical Support & Services	Atlanta (800) 237-5511	Provides assistance on more than 700 independent software applications as well as on the full range of IBM software products and operating systems. Base and enhanced pricing options are available.
Keane, Inc.	Atlanta (404) 395-7740	Offers technical support outsourcing for software publishers and OEMs and related services to other business entities. Keane also designs, develops, integrates and manages software for corporations and health care facilities throughout North America.
National Tech Team, Inc.	Dearborn, Mich. (313) 277-2277	Tech Team Technical Services provides a variety of systems consulting services including LAN/WAN development, hardware service, system re-engineering, factory automation and business process redesign.
Softmart	Exton, Pa. (610) 524-7440	Toll-free software support service available around the clock, 365 days a year. Can provide help on hundreds of popular business software products. Call blocks: Allows you to buy support by the amount of calls. End-user support: Unlimited support on a defined product set.
Software Support	Heathrow, Fla. (407) 333-4433	Toll Free Annual Support Package: Retails at $199.95 — unlimited usage for single user for one year. Available direct from Software Support or through resellers. Call blocks: Designed for individual user calls within an organization. Each person is assigned a personal identification number valid for one year.
Sykes Enterprises, Inc.	Sterling, Colo. (303) 522-6638	Provides product support for both software and hardware. Monitors queue times, abandonment rates, callbacks and call duration. Help desk support provides solutions for internal help desks as well as those accessed by external customers.

Source: Dataquest, Inc., Framingham, Mass., and vendors

Method to the madness

Smaller companies value prior business more than a direct pitch; midsize firms use more market research to evaluate hardware services providers.

Source: Dataquest, Inc.

Labor-intensive

The average service revenue per employee for U.S. service companies is $149,193.

Source: Dataquest, Inc.

Acquiring minds

Acquisitions are alive and well in the hardware services marketplace for the following purposes:

- To gain contracts and market share.
- To expand geographic coverage of a provider.
- To add existing services infrastructure to acquirer's business.
- To eliminate competition.
- To add expertise.

Source: Dataquest, Inc.

Icing on the cake

Here's a sampling of extra services offered by third-party software support vendors:

- E-mail correspondence.
- Electronic bulletin board.
- Remote dial-in diagnostics.
- System integration.
- Training/education.
- Custom application development.
- Fax-back service.
- Newsletters.
- Dial-up database.
- Training videos.

Source: Dataquest, Inc.

Not only was Ted amazed at the low cost of the Digital terminals, he was even more impressed with their performance.

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digital

BUYERS' SATISFACTION SCORECARD: Direct providers have an edge

By Kevin Burden

Between 1993 and 1994, Hewlett-Packard Co.'s PC business will grow 85%, according to International Data Corp. This will make it the fastest-growing PC maker in the world — an impressive feat in a market that has had an annual growth of less than 10%. One of the reasons for this success may be HP's high marks in technical support, which has not flagged despite the vendor's rapid growth.

HP netted the highest overall satisfaction rating of the Scorecard by achieving the top ratings in all but three of 10 critical categories. Its top score came in answer accuracy, the most important category to the users surveyed.

HP "does very well at meeting the expectations of its customers. It doesn't promise what it can't deliver," says Stephen Clancy, director of desktop services at Dataquest, Inc. in Framingham, Mass.

Direct support vendors such as HP would traditionally service all the PC hardware they sold, but the growing number of independent service providers has given users a choice. Third-party providers such as Microage, Inc., Vanstar Inc. and Inacomp Inc. have attracted the business of many large users because these providers offer arrangements direct vendors won't consider.

The Scorecard polled 50 users each of support services from HP, IBM, Dell Computer Corp., Compaq Computer Corp., Gateway 2000, Inc. and Vanstar. Thirty-seven large corporate accounts were polled for Microage and 33 for Inacomp.

Key areas in which the third-party vendors are distinguishing themselves include providing on-site service (Microage and Vanstar outdistanced HP and IBM by more than a full point in user satisfaction ratings), service customization, multiplatform expertise and price.

The third parties have on-site support staffs, and many dedicate service representatives to large customer sites, Clancy says. "People want a service partner that knows their environment and works with them, not just a provider," he says.

However, the top areas for the third parties rank fourth, sixth, seventh and ninth in the list of user priorities, according to the survey. This indicates that most of the direct vendors still hold a slight edge in basic services such as timeliness, staff skills and performance guarantees.

One surprise was the fact that most of the vendors outscored Compaq in a number of areas as well as overall. Although Compaq scored well for its accuracy of answers, the company received average or low ratings for the majority of the evaluation categories. Aside from Compaq's direct phone support, it has distanced itself from its users by relying on resellers.

Compaq has put a lot of focus on providing support to its resellers, making them smarter at supporting users," says Eric Rocco, industry analyst at Dataquest. "Their problems could stem from not actually having control over the service that is provided."

Mail-order styles differ

The Scorecard also included support ratings for mail-order vendors Gateway and Dell. Despite their common sales approaches, the two vendors posted vastly different results.

Gateway scored the lowest overall rating of the Scorecard and outplaced the other vendors only in price. These ratings reflect Gateway's low-cost, low-support approach. Users have complained about the difficulty in getting through to the vendor's telephone support. The problem is even more noticeable because Gateway's users tend to be small businesses that need strong support.

Meanwhile, Dell scored among the top vendors, with no particular weaknesses. This reflects its strategy of providing Fortune 500-level company support.

Compaq and Dell provide on-site support only to their largest Fortune 500 accounts. Gateway does not offer direct on-site service. But all three contract with other companies to broaden coverage.

Compaq contracts with General Electric Computer Service and Decision Servcom; Dell uses BancTec Service Corp. and Digital Equipment Corp., and Gateway recently switched from a small subcontractor to BP.

The Scorecard was conducted and tabulated by First Market Research in Austin, Texas. The original survey included additional indirect providers. Only those with 30 or more respondents from large user organizations are included. ■

Burden is *Computerworld*'s senior researcher, CW Guide

PC HARDWARE SUPPORT USER SATISFACTION

Ratings are based on a 1-to-10 scale, where 10 is highest in satisfaction. The ratings are weighted by the importance of the category to the users of that vendor's product. Total scores are the average of all ratings for that vendor. Categories are listed in order of importance to all users surveyed. Figures are rounded, so some averages may not be exact.

	DIRECT					THIRD PARTY		
	OVERALL SCORE	OVERALL SCORE	OVERALL SCORE	OVERALL SCORE	OVERALL SCORE	OVERALL SCORE	OVERALL SCORE	OVERALL SCORE
	HP Response base: 50 users	IBM Response base: 50 users	DELL Response base: 50 users	COMPAQ Response base: 50 users	GATEWAY 2000 Response base: 50 users	MICROAGE Response base: 37 users	VANSTAR Response base: 50 users	INACOMP Response base: 33 users
	6.4	6.1	6.1	5.8	5.6	6.3	6.1	5.8
CATEGORIES								
ANSWER ACCURACY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ANSWER TIMELINESS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
STAFF SKILLS & TRAINING	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PLATFORM EXPERTISE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PERFORMANCE GUARANTEES	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRICE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WILLINGNESS TO COME ON SITE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BUSINESS KNOWLEDGE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SERVICE CUSTOMIZATION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SERVICE REPORTING	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

BUYERS' SATISFACTION SCORECARD:
Direct providers have an edge

By Kevin Burden

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Key areas in which the third-party vendors are distinguishing themselves include providing on-site service (Microage and Vanstar outdistanced HP and IBM by more than a full point in user satisfaction ratings), service customization, multiplatform expertise and price.

The third parties have on-site support staffs, and many dedicate service representatives to large customer sites, Clancy says. "People want a service partner that knows their environment and works with them, not just a provider," he says.

However, the top areas for the third parties rank fourth, sixth, seventh and ninth in the list of user priorities, according to the survey. This indicates that most of the direct vendors still hold a slight edge in basic services such as timeliness, staff skills and performance guarantees.

One surprise was the fact that most of the vendors outscored Compaq in a number of areas as well as overall. Although Compaq scored well for its accuracy of answers, the company received average or low ratings for the majority of the evaluation categories. Aside from Compaq's direct phone support, it has distanced itself from its users by relying on resellers.

"Compaq has put a lot of focus on providing support to its resellers, making them smarter at supporting users," says Eric Rocco, industry analyst at Dataquest. "Their problems could stem from not actually having control over the service that is provided."

Mail-order styles differ

The Scorecard also included support ratings for mail-order vendors Gateway and Dell. Despite their common sales approaches, the two vendors posted vastly different results.

Gateway scored the lowest overall rating of the Scorecard and outplaced the other vendors only in price. These ratings reflect Gateway's low-cost, low-support approach. Users have complained about the difficulty in getting through to the vendor's telephone support. The problem is even more noticeable because Gateway's users tend to be small businesses that need strong support.

Meanwhile, Dell scored among the top vendors, with no particular weaknesses. This reflects its strategy of providing Fortune 500-level company support.

Compaq and Dell provide on-site support only to their largest Fortune 500 accounts. Gateway does not offer direct on-site service. But all three contract with other companies to broaden coverage.

Compaq contracts with General Electric Computer Service and Decision Servcom; Dell uses BancTec Service Corp. and Digital Equipment Corp.; and Gateway recently switched from a small subcontractor to HP.

The Scorecard was conducted and tabulated by First Market Research in Austin, Texas. The original survey included additional indirect providers. Only those with 30 or more respondents from large user organizations are included. ■

Burden is *Computerworld*'s senior researcher, CW Guide.

PC HARDWARE SUPPORT USER SATISFACTION

Ratings are based on a 1-to-10 scale, where 10 is highest in satisfaction. The ratings are weighted by the importance of the category to the users of that vendor's product. Total scores are the average of all ratings for that vendor. Categories are listed in order of importance to all users surveyed. Figures are rounded, so some averages may not be exact.

	DIRECT					[illegible]		
	HP Response base: 50 users	IBM Response base: 50 users	DELL Response base: 50 users	COMPAQ Response base: 50 users	GATEWAY 2000 Response base: 50 users	[illegible]	[illegible]	[illegible]
OVERALL SCORE	6.4	6.1	6.1	5.8	5.6	6.3	6.1	5.8
CATEGORIES								
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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FIRING LINE: Third parties cover a wider field of problems

By Kevin Burden

In PC software support, the difference between third-party and direct providers is a matter nf breadth and depth. The third parties are more willing to troubleshoot conflicts among a wide range of products. But the direct providers have a deeper level of knowledge abont their own products.

"Among Fortune 500 [user] companies, everyone assumes [the vendor] will provide accuracy and product expertise," says Carter Lusher, research director nf information technology management at Gartner Group, Inc. "What they expect from third parties is price and cross-platform/cross-vendor support."

For this Firing Line on PC software support, we asked four user organizations that contract with both direct and third-party PC software support firms to evaluate their vendors. Included in this evaluation are a utility, two graphics design firms and a medical systems company.

We then compared these users' views with the results nf our Buyers' Satisfaction Scorecard survey, which polled users of the leading direct and third-party PC software support vendors.

Together, the more than 200 users in Scorecard and the four evaluators came to the following consensus:

- Support quality is comparable from third parties and direct vendors, with direct vendors having a slight edge in answer accuracy.
- Direct vendors know their products better, but third parties are capable nf troubleshooting a broader range of products.
- Because direct vendors began charging separately fnr support last fall (previously it was built into the software license), third parties are more competitive on price and freqnently offer a slightly better deal.
- Third parties differentiate themselves by making on-site service calls, while direct vendors are reluctant to do so.
- Direct vendors generally know more abont the business they are servicing. But third parties will more readily customize their service offerings and provide better problem tracking and reporting.

Answer accuracy

Support providers in general have a tendency to assume that they know more than actually they dn, according to the respondents. They also tend to give np and recommend a reinstall, the Firing Line evaluators said.

Design 2: "Because third parties are working from a general pool of knowledge, there are times when they assume they know the answer when they really don't."

Utility: "Sometimes they say, 'Just reload the software.' But I seem to get that less than when I used direct support."

Answer timeliness

Each of the four users said response time from third parties generally was fast. Easy questions were typically answered on the spot, and complicated questions seldom took longer than 24 hours.

Design 2: "Of the third-party providers we have used, their response has typically taken five to 10 minutes to be delivered. Difficult questions have taken up to a day."

Platform expertise

Third-party providers possess general computing expertise. Direct providers have considerable knowledge of their particular packages.

Design 1: "With third parties, we can talk down and dirty about computers and solve the problem, whether it's in the particular software package they are supporting for us nr a conflict somewhere else nn the system. You seldom get to that level with a direct provider."

Price

The evaluators' third-party support costs ranged from free with purchase of the software package tn $175 annually. Real cheap, as one user put it. Users also said phone costs showed some improvement over costs from direct providers.

Design 1: "Sitting in the telephone-waiting dungeon nf a direct provider is frustrating, especially when it's your nickel."

Business knowledge

Evaluators found benefits when they reached support staff members who could identify with their business.

Design 2: "On the occasions when I have reached a person that knows a bit about my industry, its been a real treat."

PC SOFTWARE SUPPORT USER SATISFACTION

Ratings are based on a 1-to-10 scale where 10 is best. The ratings are weighted by the importance of the categories to all users surveyed. Total scores are the average of all ratings for that market segment. Categories are listed in order of importance. All users surveyed are business users from medium and large companies. Figures are rounded, so some averages may not be exact.

	DIRECT Vendors: Novell, Inc., Lotus Development Corp., Microsoft Corp. ([illegible] users)	THIRD PARTY Vendors: Bell Atlantic Corp., Corporate Software, Inc. ([illegible] users)
TOTAL SCORE	5.8	5.9
[illegible]	7.7	7.3
[illegible]	6.7	6.6
[illegible]	7.0	6.8
[illegible]	6.5	5.8
[illegible]	5.9	6.0
[illegible]	5.5	5.9
[illegible]	4.2	5.6
[illegible]	5.4	4.8
[illegible]	4.7	5.4
[illegible]	4.6	4.9

Service customization

Third-party providers are more willing to customize services to meet individnal needs.

Design 1: "I've recommonded several packages to my third-party [provider], which they are now cnnsidering supporting. If they do, we will end up with one-stop shopping."

Status reporting

Evaluators said third parties were better at follow-up.

Utility: "My provider constantly updates me on their progress during a problem." ■

Happiness is . . .

Does your happiness with the support you receive affect your product purchasing loyalties? If you're among the 8,600 users surveyed this year by Prognostics, a buyer research firm in Menlo Park, Calif., the answer is a resounding yes.

In a survey of more than 1,300 PC and workstation hardware users, Prognostics found that users receiving direct support are most likely to stick with their present product vendor. Those who obtain dealer support are the next most loyal to their vendor. Users also reported the highest level of satisfaction with dealer-provided support.

But users supported by independent third parties are least likely to buy hardware from the same vendor, the survey said.

On the software side, the story is reversed. More than 7,300 users surveyed said they are more loyal to software vendors if they obtain their support elsewhere. If these users resort to support from the vendor or third parties, they are less likely to purchase other products from the same supplier.

USER LOYALTY

Users of third-party support are the least loyal to specific brands of hardware and software

PC HARDWARE

Would you buy this PC hardware again?	YES	NO
USERS OF THIRD PARTY SUPPORT	73%	27%
USERS OF IN HOUSE SUPPORT	77%	23%
USERS OF DEALER SUPPORT	80%	20%
USERS OF DIRECT SUPPORT	82%	18%

Response base: [illegible]

PC SOFTWARE

Would you buy this PC software again?	YES	NO
USERS OF THIRD PARTY SUPPORT	86%	14%
USERS OF DIRECT SUPPORT	88%	12%
USERS OF IN HOUSE SUPPORT	90%	10%
USERS OF RESELLER SUPPORT	96%	4%

Source: Prognostics, Menlo Park, Calif.

INTERVIEW

by Derek Slater

AND THE LAW

Legal expert Edward Cavazos warns IS chiefs to safeguard their companies from on-line abuses – or end up in court

Good news: So far, only a few Internet surfers have been dragged into court for actions committed in cyberspace. Bad news: It can't last.

Edward Cavazos, an attorney at Andrews & Kurth in Houston and co-author of the forthcoming book *Cyberspace and the Law* (The MIT Press), warns that "you can expect this stuff" — copyright infringement, possession of illegal adult materials and defamation — "to start hitting the fan over the next few years." These are just a few of the issues that could drag an ill-prepared business into court, says the 26-year-old litigator, who specializes in labor, employment and computer law.

Cavazos has been on-line since the mid-'80s, when he operated a bulletin board service in Austin, Texas, as a hobby. Shortly thereafter he hooked up to the Internet, which he now uses for law research as well as electronic-mail communications.

Free-lance writer Derek Slater spoke to Cavazos, who gave a presentation on Unix security and legal issues in Austin.

COMPUTERWORLD **What are the biggest legal worries for the information systems manager whose users are hooking up to cyberspace?**

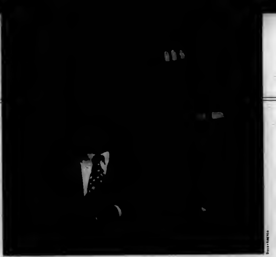
CAVAZOS One of the top legal issues is privacy.

When a company connects to cyberspace, it's going to facilitate people sending private communications — E-mail — to the outside world. That brings with it a host of problems. The Internet is a little different in the eyes of the law because it's no longer as clear that [E-mail] discussion needs to be about things in which the employer has a business interest. So, if you're all of a sudden allowing Joe Employee not only to E-mail his co-workers but also his wife and his grandmother, it creates new issues with respect to privacy.

There is some precedent with the telephone. For example, in some states the employer can listen in on work-related phone calls but has to stop listening when it becomes apparent it's not work-related.

Another concern, probably equally important, has to do with materials

ATTORNEY EDWARD CAVAZOS: 'Being too swept up by the hype of the Internet could persuade someone to bring in a big pipe with an undefined role. It's not a no-risk proposition.'



that might be brought in to your system. The Internet makes it so easy that it's possible people are going to be grabbing illicit materials along with legal materials.

Primarily, the focus is on copyright infringement. There are sites on the Internet where pirated material is available, whether it be software or copyrighted audio. Also, there are some adult materials where mere possession is a crime. It's an interesting question — who possesses this material if it's sitting on the file server for the company's network.

COMPUTERWORLD **Incoming material is one issue, but what about outgoing information?**

CAVAZOS That is problematic because your company can be identified with the people pumping out the information.

Let's say an employee on lunch break decides he wants to interact on Usenet. It may be when he throws in his two cents on the debate of the day, he's doing so from an E-mail address that clearly identifies him with your company.

It rises to a more serious concern if the content of the message is actionable. One possibility is that it's a legally binding contract. Another is that it's harmful or defamatory material. If you get defamatory comments spread around on the company letterhead, it is a foregone conclusion that the company is somehow involved in that.

You can do a lot more defamation on the 'net than you can with paper because a well-placed post can go to a lot of people. You could be implicating your company in a problem in which it's really not involved.

COMPUTERWORLD **In what situations can an employee get himself — and his company — into hot water purely by accident?**

CAVAZOS Copyright is a good example. The average Internet user is woefully uninformed about copyright law. People don't realize that everything anyone writes generally is immediately copyrighted — they don't have to go out to the copyright office and register it.

A lot of people play fast and loose on the 'net, grabbing things that are copyrighted, moving them around, giving them to friends, bringing them to work. As the 'net becomes more multimedia-oriented, problems arise with text scanned in from print publications, audio clips, video clips.

People say, "Here's a great article from *The Wall Street Journal* that I think everyone in this news group will find interesting." Well, you can't do that. But it's incredibly prevalent on the 'net — happens all the time.

COMPUTERWORLD **What about the ease of sharing company documents or memos over the network — does that raise unique legal issues?**

CAVAZOS There are definitely concerns about losing proprietary trade secrets and information. One legal ramification deals with patentability.

New technologies that might be protected under a patent become less protected if there's been a public disclosure before the patent application. [A public disclosure could be something as simple as] your R&D people comparing notes with other people out on the Internet. You must let them know there are legal ramifications for doing so.

This is kind of unique to the Internet. Obviously, it's always been unwise to share your trade secrets, but with the 'net, you have such instant access to people, you might be tempted.

Before, the guy in the lab probably didn't have a lot of friends who cared to talk about his new genetic engineering project. When he finds himself on the network with a community of other people who are working on the same types of things and discussing them, the temptation and the possibility [of disclosure] are much greater.

COMPUTERWORLD **Short of monitoring every keystroke and every Telnet connection users make, how can IS managers protect themselves and their companies?**

CAVAZOS The way for an IS person to go at it is as employment law. Let the employee know up front the acceptable use of the system as part of the terms of employment.

You say, "Look, we're giving you the Internet, and you're supposed to use it for these reasons. Let's agree to that before we turn you loose with

Cyberspace and the law, *page 116*

Who's responsible?

The following real-life legal dramas underscore the emerging issue of organizational liability:

Flaming liability

ON-LINE SERVICE PROVIDER Prodigy Services Co. is under legal siege for defamatory remarks posted against a business.

Long Island-based securities firm Stratton Oakmont, Inc. filed a $200 million libel suit against the user who posted the defamatory comments and against Prodigy for failing to remove the offending message. Prodigy already screens E-mail for obscenities or racist comments; the "flame" in question accused Stratton Oakmont of fraudulent securities offerings.

The case is complicated by some confusion over the actual author of the message. It may be a long time before a decision is reached about whether Prodigy will be held liable for libel.

Cyberspace censorship?

AGAINST THE OBJECTIONS of civil liberties activists, Pittsburgh-based Carnegie Mellon University has decided to cut sexually oriented newsgroups from its Internet servers because some of these on-line discussion forums are dedicated to posting explicit digitized photographs. Pennsylvania obscenity laws prohibit distribution of such images. These images have been downloaded or viewed more than 6 million times at the school, according to a study by one Carnegie Mellon research associate.

Prosecuting the owner of a server for racy pictures could be complex, however. One thorny issue is the location of the crime: If a file of uncertain origin resides in Pennsylvania but is downloaded, decompressed and viewed on the West Coast, where does the prosecution take place?

Copycat

DAVID LAMACCHIA, a 20-year-old student at MIT, is in court for using the school's Internet servers to distribute copyrighted software.

LaMacchia faces charges of conspiracy to commit wire fraud. A conviction could bring him as many as five years in federal prison, plus fines well beyond the scope of ordinary school loans.

The twist for the defense is that LaMacchia collected no money for his efforts and neither uploaded nor downloaded any of the copyrighted programs. He only operated a bulletin board that made such activities possible.

LaMacchia's case is pending. —*Derek Slater*

Cyberspace AND THE LAW

CONTINUED FROM PAGE 115

it." That keeps away a lot of these problems.

Being too swept up by the hype of the Internet could persuade someone to bring in a big pipe with an undefined role. It's not a no-risk proposition, [such as] trying out a laser printer. The worst thing that happens with a printer is that you end up with a big piece of equipment sitting there that no one uses, whereas with the Internet, it's also possible that you've opened up your business to new legal risks.

COMPUTERWORLD **Which legal areas in the on-line world have actually been played out in court?**

CAVAZOS There is some case law out there with regard to defamation. If I get on a public part of the Internet and flame you, there is not a lot of debate as to whether I'm going to be held responsible for that.

The debate comes in with what's called "third-party liability," [referring to] the Internet access providers, people who retransmit the message and so forth. Conceivably, a company could be liable for messages that come from the outside and are distributed to employees by the company's system because in that case [the company is] acting as a publisher in some ways.

It's analogous to someone mailing the company a note that defames someone else and the company photocopies it and posts it all over the building. Arguably, the company is doing the same thing if its server reposts an E-mail message from outside. This issue is just now coming to the forefront.

Prodigy, for example, was just named in a $200 million lawsuit for comments one of its users made defaming [securities firm] Stratton Oakmont [see story page 115]. That case highlights the problem: Prodigy didn't originate the messages, but the messages got pumped out to all Prodigy's users.

I think that case is an early warning sign to large networked companies that they're acting in [some] way as a publisher.

There is also a case in which an MIT student is alleged to have opened up MIT's computers so people could swap pirated software. There are criminal charges pending [see story page 115]. Although the criminal prosecution didn't extend to MIT, there were questions about whether it could have because the student was using MIT's equipment. A prosecutor bent on making a name for himself, I think, may say there's a potentially bigger case here.

It's just a matter of time before someone drags in an employer, and the law is going to get tested to see just what the limits of liability are for the host system. You don't want to be a test case.

COMPUTERWORLD **Isn't all this worry a tad overblown because only a handful of legal cases have cropped up dealing with cyberspace?**

CAVAZOS People overemphasize that lack of legal precedent on the Internet.

There is almost always some legal precedent that is going to be borrowed when a court tries to make a determination, even if it has to make a stretch. Notice that we've ended up reaching for some analogies here. Unfortunately, in the absence of direct correlations, that's the kind of precedent that's going to be used in deciding Internet court cases.

As more people and more businesses come onto the 'net, things will become increasingly litigious. It's happening in a small way now. I don't think it's too early to act because all it takes is one big lawsuit to make you wish you'd taken precautions.

A lot of this stuff is going to start hitting the fan, and there's real potential that it will get resolved in unproductive ways. You don't want people to say, "Well, cyberspace was neat, but it's too dangerous a game to play." ■

Slater is a free-lance writer in Framingham, Mass., who can often be found on the Internet Chess Server under the pseudonym Ratface.

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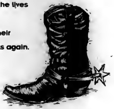

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Operation Cinderella

As organizations flatten, operations staffers are finally coming out of the basement and enjoying new visibility

By Bronwyn Fryer

For years, the folks responsible for performing manual tasks such as tape backups and feeding printers have been the Rodney Dangerfields of computing — they don't get any respect. They've also been among the first to receive pink slips as companies automate these tasks.

Ironically, corporate downsizing is coming to their rescue. As companies become less hierarchical and employees are expected to shoulder more responsibility, operations staffers are being put first in line for critical customer and end-user support positions.

"When incorporated into the communications flow, [these] folks can quickly learn to short-circuit end-user problems," says Michael Liebman, a principal at Professional Management Consulting, a Baltimore consulting and training firm. "Being in touch with the business also helps them move ahead because they've become part of the company's internal network."

Operations staff in highly competitive and service-oriented industries are encouraged to learn as much as possible about customers' needs. For example, at Florida Infomanagement Services (FIS), a financial data processing service bureau in Orlando, all 27 staffers who report to operations division manager Dennis Halloran are required to meet with the company's external clients. That's because operations personnel act as FIS' technical support group, taking support calls around the clock.

"In the old days, operations staffs were looked at as a cellar function," Halloran notes. "But if you're going to contribute to our business, our operations folks must know everything they can about our structure and about what our customers want."

Other organizations are following suit. At Baxter Healthcare Corp. in Deerfield, Ill., the manufacturing operations staffs that make the company's kidney dialysis products must complete three-day training sessions in dialysis centers and hospitals to see firsthand how the products are used.

"In many companies, operations staffs are at the end of the communications line," explains Dan Ford, manufacturing operations manager at Baxter. "A customer tells a salesperson what a problem is, sales tells marketing, marketing tells operations. Somewhere the message gets lost. By putting operations people in front of customers, you get better communication and reduce costs."

Of course, the degree to which operations staffs are encouraged to get involved depends on management. Some may worry that bringing operations into the customer's world can backfire, but such concerns are largely unfounded. "Ninety-nine percent of the time that doesn't happen," Ford says.

Regardless of management's philosophy, operations personnel interested in expanding their horizons have ample opportunity. By learning existing computer technology, a staffer can easily find a doorway to a position outside operations such as a PC support technician or a network administrator, says David Bullard, director of computer systems and operations at Clemson University in Clemson, S.C.

Operations managers willing to help should consider setting up mini cross-training programs, Liebman says. "Have operations staff spend a day in sales, a day with the data-entry clerks, a day in accounting and so on," he suggests. "Once they know how sales or data entry works, they can become important resources for these departments in answering questions about computer operations." ■

Fryer is a free-lance writer in Boulder Creek, Calif.

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Busy signal

While jobs are on hold at many telephone companies, systems integrators are picking up the slack as they take on much of the utilities' product development

By Julie Hart

Hiring may just be keeping pace with the turnover rate at telephone companies, but that doesn't mean the industry is stagnant. Not by a long shot. "The big long-distance companies such as AT&T, Sprint and MCI have made big leaps since the mid-80s," says Chris Finn, a senior consultant at Tele-Choice, Inc. in Verona, N.J.

Today, most local telephone utilities and regional bell operating companies (RBOC) are working fast and furious to upgrade antiquated systems. "These companies are at the beginning of a huge re-engineering process," says Eric Schnadig, a telecommunications marketing specialist at Keo An Systems Corp., a consulting and product development firm in Cambridge, Mass.

The two hottest information systems projects involve the design, development and deployment of client/server-based billing and customer service systems. But consultants and systems integrators are handling most of this work, analysts say.

"Telephone companies are currently outsourcing a number of critical functions, including IS," Schnadig says. In fact, contracting out re-engineering "is more cost effective and faster since they don't have to deal with internal delays."

"Sixty percent of Sprint's new hires have Unix, C or C++ experience, while the remainder have Cobol skills," says Bill Gura, senior recruiter at Sprint. "The need for Cobol will eventually drop off as Sprint builds more client/server systems."

A trend here to stay

While some utilities, such as Pacific Bell, are hiring to do the work internally, outsourcing is a trend that is likely to continue, says Rex Stringham, director and principal analyst of Telecommunications North America at Dataquest, Inc. in San Jose, Calif.

However, consulting doesn't put a damper on job opportunities in this industry. That is, if you don't mind working for the systems integrators doing the work. Companies such as American Management Systems, Andersen Consulting and Electronic Data Systems Corp., for example, are heavily involved in the utility market, according to Stringham.

Skills that are in demand include relational database and client/server experience. Professionals who can build gateways from one application to the next, have a thorough grasp of how network protocols interact and can design a network architecture are also needed.

"It's very hard to find these people," says Christopher Serjak, a consultant at Northeast Consulting Resources, Inc. in Boston. For instance, the right candidate understands how the number of users or the bandwidth hierarchy affects network traffic and is also capable of mirroring the network architecture to a company's overall business strategy.

If you're highly skilled, your chances of getting on board increase. "There are more higher paid positions and fewer lower paid positions at" telephone companies, Finn says. "And if you're an object-oriented programmer, you're gold wherever you look for a job."

Building competition

Entry-level recruiting is especially healthy at Sprint Corp. in Kansas City, Mo. "We have so many chiefs already that we need some Indians to do the work," says Bill Gura, senior recruiter at Sprint. In fact, "60% of Sprint's new hires have Unix, C or C++ experience, while the remainder have Cobol skills." The need for Cobol will eventually drop off as Sprint builds more client/server systems, Gura adds.

The driving force behind the employment growth is increased competition. "Many of the computer systems in place are based on old paradigms," Finn says.

Telephone companies are also providing more services. For example, many RBOCs plan to offer videoconferencing and video shopping services. In addition, flexible billing and customer service systems are a requirement to handle the billing of these new services. "With so many enhanced services on the horizon, the biggest black hole [in telephone companies] is billing," Stringham says.

In any event, telephone companies must be able to quickly introduce new products and services, Schnadig says. "The industry is just beginning to wake up to the fact that information is a critical part of this process." As a result, there's a lot of work to be done in the coming years. ■

Hart is a free-lance writer in Sunnyvale, Calif.

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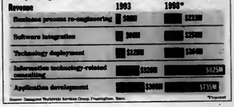
Consultants are cashing in on re-engineering. For example, firms in the communications industry, including telephone companies, are spending the following on systems integration services:



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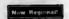

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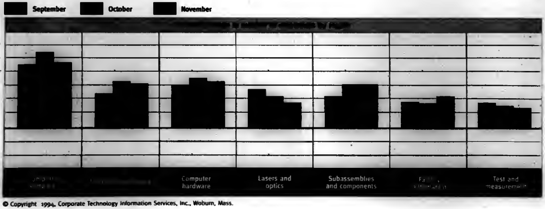

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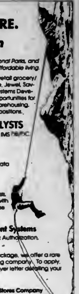

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COVERING *your* assets

Rudimentary and unintegrated software asset management tools have companies looking to outside firms for help

BY **ALAN RADDING**

If lawyers from the Software Publishers Association marched through the door, could you truthfully tell them what your company spends annually on software? How many copies of a particular application you own? What software is installed on each and every PC?

You'd like to say yes, but only a few companies could give anything but a ballpark figure at best. And most would be hard-pressed to prove it.

"The need for software asset management has been around for a long time, but it was a problem better left unsaid," says Bob Johnson, a senior analyst at Dataquest Worldwide Services Group in Framingham, Mass. Managers tacitly agreed not to open that can of worms.

Only recently have vendors turned attention to this issue, offering a variety of software asset management outsourcing programs. But why are vendors digging into the worms now?

Several factors have converged. "You're seeing a proliferation of software," says Tom Woods, director of customer marketing at Corporate Software, Inc. in Canton, Mass. "Where five years ago each PC ran DOS and had maybe two or three software packages, today the PCs run Windows and have six or seven software packages."

"We [also] needed a way to ensure license compliance," says Patrick Armstrong, software asset project manager at the Washington State Department of Labor and Industries in Olympia. The department hired Deloitte & Touche spinoff Micropath, Inc., a 2-year-old PC asset management consulting firm in Bellevue, Wash., to compile information for its approximately 2,900 PCs and help develop an ongoing process to keep the organization legal.

Aside from that, tools to efficiently manage software assets are finally emerging, and software vendors themselves are offering discounted volume license agreements. To get these savings, customers must know how much software they need and have processes in place to control distribution and enforce compliance. In effect, users can capture steep discounts — 40% to 50% off the street price — but must assume software asset management chores, Woods says.

Moreover, the return on investment from software asset management looks promising. A widely cited Gartner Group, Inc. report indicates that 86% of the total costs of managing software assets comes from the labor involved in administration, support and training. Outsourcing can reduce that labor cost.

Ultimately, "customers can and should do software asset management themselves," says Richard Sims, president of Software Spectrum, Inc. in Dallas. However, they must wait for tools to become widely available and integrated, says Ki Wilson, a senior microcomputer manager at Stone Container Corp. in Chicago. "We are using a patchwork of different products," Wilson says. ■

Radding is a free-lance writer in Newton, Mass.

WHAT'S YOUR NEED?

If you don't know what or how much software to buy: Large software resellers such as Corporate Software or Software Spectrum offer expertise in acquiring and deploying software. The largest vendors are automating the processes of buying and delivering software.

If you don't have the manpower or the technology to install the software: Help-desk outsourcing vendors know the difficulties in administering a large base of PCs. Leading vendors offer a remote support infrastructure on which they are building electronic configuration management and software distribution capabilities.

If you're functioning on the enterprise level: Systems vendors such as Unisys Corp. and Digital Equipment Corp. know the complexity of the multivendor, enterprisewide system and are developing system management tools that deliver software asset management in the context of overall system management.

If you need to get a software asset management program up and running: Big Six-like accounting firms such as Deloitte & Touche are spinning off companies such as Micropath to perform baseline hardware and software inventory, develop software asset management processes and set up programs to bring the company into compliance. However, they don't provide ongoing software asset management.

Source: Dataquest Worldwide Services Group, Framingham, Mass.

Picking a provider

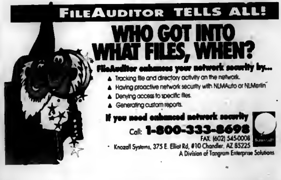
COST. Some vendors build the cost of software asset management into volume software purchases. Break the two of them out to see what you're spending on each.

SOFTWARE CHOICE. Vendors may limit their software asset services to specific software. Look for multivendor software procurement and asset management.

ASSET MANAGEMENT TOOLS. Some vendors are developing their own remote software asset management tools. The use of these tools should reduce cost while increasing service quality.

INFORMATION. A key benefit of software asset management is the information the vendor provides. Look for timely, accurate reports about existing software, purchases, configuration, usage and documentation.

SCOPE OF SERVICE. Some vendors provide comprehensive service, from purchase evaluation through installation. Others set you up and expect you to run with it.



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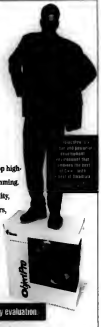

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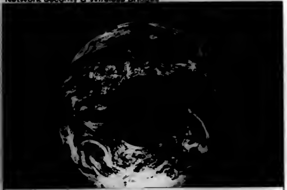

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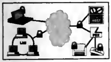

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Companies in this issue

Page number refers to page on which story begins

Dec. 2 Stock Ticker

Gainers Losers

Percent

Gainers		Losers	
Zeos International Ltd. (H)	38.5	American Software Inc. (L)	-16.1
Quarterdeck Office Sys.	16.1	MathSoft	-14.8
Xylogics Inc. (H)	14.7	Cray Computer	-13.6
Evans & Sutherland	13.4	Bachman Info Systems	-12.9
Lotus Development	13.1	Ross Systems	-11.1
McAfee Associates	12.7	MCI Communications Corp. (L)	-11.0
Software Spectrum Inc.	12.7	Pinnacle Micro Inc.	-11.0
Cheyenne Software Inc.	12.5	Compression Labs Inc. (L)	-10.9

Dollar

Gainers		Losers	
PowerSoft (H)	5.50	Xerox Corp.	-2.63
Lotus Development	5.13	IMRS	-2.47
Xylogics Inc. (H)	5.13	MCI Communications Corp. (L)	-2.38
Printronix Inc.	3.00	General DataComm Inds.	-2.38
Tandy Corp.	2.88	Sprint Corp. (L)	-2.25
Progress Software Corp.	2.75	Dell Computer Corp	-2.19
PeopleSoft	2.69	Texas Instruments	-1.75
Sybase Inc.	2.63	3COM Corp	-1.75

LOTUS DEVELOPMENT CORP. STOCK JUMPED DUE TO RUMORS THAT THE COMPANY MIGHT BE ON FOR SALE. HEWLETT-PACKARD CO. FELL FURTHER ON THE LOSERS LIST AFTER ANNOUNCING PLANS TO CUT PRICES ON ITS LOW-END COMPUTERS.

Still getting a dial tone

It is a good thing phone service has not gone the same route as telecommunications stocks during the past month. Since the November election, shares of **AT&T Corp. (T)**, **Sprint Corp. (FON)** and **MCI Communications Corp. (MCIC)** have dropped close to or hit 52-week lows.

"The industry in general seems to be hit negatively with the perception that with the Republican victory, new legislation might introduce more long-distance competition sooner," said Connie Lueke, an analyst at Duff & Phelps Investment Research in Chicago.

An immediate free-for-all in the long-distance service market would definitely cut into these stocks' profitability. According to Darrell Edmonds, an analyst at Mabon Securities Corp. in San Francisco, regional long-distance service competition — currently accounting for up to 40% of the market — might cut prices by up to 50% and lower profits.

But Wall Street watchers agreed that the election results are just part of the uncertainty in the long-distance telecommunications industry. "The whole sector has been in a funk since October 1993," said Michael Elling, an analyst at Prudential Securities Research in New York. "The convergence with multimedia and wireless [that was] talked about in 1993 did not play out in 1994. Now, investors are going into 1995 totally confused as to what is going to happen."

There are also questions about the outcome of today's Federal Communications Commission wireless auction (see story page 30), where Sprint and AT&T are major players. But analysts agreed that worries about the stocks seem to be a little overblown.

Of the three companies, Sprint is in the best position, having sidestepped the battle between AT&T and MCI by making cable and wireless alliances to provide end-to-end communications, Elling noted. And while MCI has fared the worst of late, both Lueke and Edmonds said they feel the stock is starting to look favorable. — *Tim Ouellette*

Bad connection

Wall Street doesn't like the uncertainty in the telecommunications market

Company	Sept. 30	Nov. 23	Dec. 1	52-week low
AT&T	54 1/8	54 3/4	48 7/8	48 3/8
MCI	24 7/8	22 3/4	19 1/2	18 13/16
Sprint	38 11/16	38 1/8	29 5/8	29 3/4

Exch	52-Week Range		Company	Dec. 2 3pm	Wk Net Change	Wk Pct Change
[illegible]						
OTC	46.00	20.13	3COM Corp	42.75	-1.75	-3.9
NYS	63.38	36.25	Ameritech Corp.	39.25	-0.63	-1.6
NYS	57.13	48.00	AT&T (L)	48.00	-1.75	-3.5
OTC	26.30	12.75	Banyan Systems Inc.	19.25	1.25	6.9
OTC	43.88	18.63	Bay Networks Inc.	24.88	-0.81	-3.2
NYS	61.75	49.00	Bell Atlantic Corp.	49.50	-1.25	-2.5
NYS	63.50	30.50	BellSouth Corp	51.25	1.63	-3.1
NYS	21.50	10.00	Bolt, Beranek & Newman	18.38	0.88	4.7
OTC	15.75	9.00	Brooktrout Technology	11.75	-0.25	-2.1
NYS	53.00	33.06	Cabletron Systems	46.88	-0.13	-0.3
OTC	43.00	10.00	Centigram Communications	20.13	0.50	2.8
OTC	45.00	21.00	Chipcom Corp	39.25	-0.25	-0.6
OTC	80.75	18.75	Cisco Systems Inc.	32.25	-0.13	-0.4
OTC	16.13	6.63	Compression Labs Inc. (L)	7.13	-0.88	-10.9
OTC	12.38	3.13	Computer Network Tech.	6.75	0.25	3.8
OTC	50.25	7.50	CrossComm	8.50	-0.13	-1.5
OTC	3.00	1.50	Data Switch Corp	2.00	0.13	5.3
OTC	35.00	17.88	DSC Communications	29.63	-1.02	-3.3
OTC	60.50	20.00	FORE Systems Inc.	50.38	-0.13	-0.2
NYS	34.88	8.25	General DataComm Inds.	26.75	-2.38	-8.3
NYS	37.25	29.50	GTE Corp	30.75	-0.38	-1.2
NYS	95.97	78.63	ITT Corp	79.03	-1.50	-1.8
OTC	29.00	18.81	MCI Communications Corp. (L)	19.13	-2.38	-11.0
OTC	15.75	8.13	MICOM Communications Corp.	14.00	0.75	1.8
OTC	50.63	4.00	Microcom Inc.	9.88	0.56	6.0
OTC	7.25	4.00	Netrix Corp.	6.88	0.38	5.8
OTC	8.75	3.75	Network Computing Devices	4.21	0.13	3.0
NYS	23.25	7.38	Network Equipment Tech.	20.63	0.13	0.6
OTC	23.38	13.00	Network General	21.38	0.88	4.3
OTC	9.63	6.38	Network Systems Corp.	7.50	0.00	0.0
NYS	68.75	26.50	Newbridge Networks Corp.	32.50	-0.75	-2.3
NYS	37.25	26.00	Northern Telecom Ltd.	32.25	0.00	0.0
OTC	36.63	13.38	Novell Inc.	19.38	0.50	2.6
NYS	43.63	33.75	Nynex Corp	37.50	-1.25	-3.3
OTC	30.00	15.30	Octel Communications Corp	21.38	0.38	1.8
OTC	34.25	10.75	Optical Data Systems Inc.	26.38	-1.00	-4.0
OTC	7.50	2.13	Penril DataComm Networks (L)	2.38	0.13	5.6
OTC	22.50	10.00	PictureTel Corp	21.75	1.63	8.1
OTC	7.88	2.13	Proteon Inc.	5.50	0.31	6.0
OTC	14.38	2.75	Racotek Inc.	3.88	0.00	0.0
OTC	11.25	6.25	Retix	4.88	0.00	0.0
NYS	23.25	12.44	Scientific Atlanta Inc.	19.25	-0.88	-4.3
NYS	45.25	36.75	Southwestern Bell Corp	40.88	1.13	-2.7
NYS	40.13	29.13	Sprint Corp. (L)	29.13	-2.25	-7.2
OTC	26.75	13.38	Standard Microsystems Corp	23.75	1.13	5.1
OTC	65.00	13.00	StrataCom Inc	55.00	1.69	3.2
OTC	15.25	3.88	Telebit Corp.	4.50	-0.19	-4.0
OTC	46.00	23.00	US Robotics	37.25	-1.50	-3.9
NYS	47.25	35.13	US West Inc (L)	35.13	-1.25	3.6
OTC	28.75	12.75	Xircom	18.00	-0.06	-0.3
OTC	40.00	13.25	Xylogics Inc. (H)	50.00	5.13	14.7
[illegible]						
OTC	7.50	3.00	Advanced Logic Research	4.63	-0.13	2.6
OTC	49.75	24.63	Apple Computer Inc.	36.38	1.38	-3.6
OTC	33.00	10.38	AST Research Inc	14.75	0.75	5.4
NYS	63.00	23.41	Compaq Computer Corp.	38.88	0.25	0.6
OTC	47.38	30.13	Dell Computer Corp.	41.06	-2.19	-5.1
OTC	35.00	8.75	Gateway 2000 Inc.	20.75	-1.13	-3.1
NYS	102.30	71.88	Hewlett Packard Co.	96.90	-0.88	-0.9
NYS	33.13	18.75	Silicon Graphics	29.25	-1.13	3.7
OTC	34.50	18.25	Sun Microsystems Inc.	32.50	0.44	1.6
NYS	50.75	30.75	Tandy Corp	44.50	2.88	6.9
OTC	9.00	2.38	Zeos International Ltd (H)	9.00	2.50	38.5
[illegible]						
ASE	10.88	5.25	Amdahl Corp	9.50	-0.38	3.8
NYS	8.88	6.38	Convex Computer	6.25	-0.38	-5.7
OTC	3.00	0.50	Cray Computer	1.19	-0.19	-13.6
NYS	53.75	17.75	Cray Research Inc.	18.38	-0.13	-0.7
NYS	12.00	6.63	Data General Corp	10.25	-0.75	-6.8
NYS	38.13	18.21	Digital Equipment Corp.	32.88	-1.13	-3.3
OTC	6.38	2.38	Encore Computer Corp	3.81	0.19	5.2
OTC	12.50	6.50	Harris Computer Systems Corp	11.30	-0.75	-6.1
NYS	76.38	51.38	IBM	70.75	-0.50	-0.7
OTC	18.75	7.50	NetFrame	8.13	0.00	0.0
OTC	10.00	3.88	Parallan Computer	5.00	0.13	2.6
OTC	16.50	5.38	Pyramid Technology	10.75	0.88	8.9
OTC	20.13	11.13	Sequent Computer Sys.	18.88	0.13	0.7
OTC	6.84	3.25	Sequoia Systems Inc.	3.50	-0.38	-9.7
NYS	39.88	22.88	Stratus Computer Inc.	37.13	1.13	3.1
NYS	19.13	10.00	Tandem Computers Inc.	16.75	0.25	1.5
OTC	30.00	3.88	TriCord Systems	6.13	0.13	2.1
NYS	16.30	8.63	Unisys Corp	9.13	0.00	0.0
Software						
OTC	38.50	19.75	Adobe Systems Inc.	33.25	1.00	3.1
OTC	6.50	3.25	American Software Inc. (L)	3.25	-0.63	-16.1
OTC	40.00	20.13	Autodesk Inc.	36.50	2.19	6.4
OTC	3.88	3.75	Bachman Info. Systems	3.50	-0.50	-12.9
OTC	28.25	20.50	BGS Systems Inc.	27.00	2.50	10.2
OTC	73.00	40.25	BMC Software Inc.	44.75	1.50	3.5
OTC	35.75	15.00	Boole & Babbage	26.50	-0.38	-1.5
OTC	16.00	8.50	Borland Int'l Inc.	8.56	-1.00	-10.5
OTC	25.00	6.75	Brock Control Systems Inc.	7.38	-0.63	-7.8
OTC	4.00	2.13	CE Software	2.38	0.06	2.7
ASE	30.34	6.25	Cheyenne Software Inc.	12.38	1.38	12.5
OTC	16.13	8.50	Cognos Inc	13.88	-0.50	-3.9
NYS	50.88	27.38	Computer Associates	46.38	-0.75	-1.7
NYS	5.38	2.50	Computervision Corp	3.63	0.38	11.5
OTC	49.25	24.50	Compuware Corp	37.00	2.00	5.7
OTC	14.75	9.00	Comshare Inc.	13.75	-0.25	-2.0
OTC	18.66	10.66	Corel Corp	13.66	-0.22	-1.0
OTC	16.50	7.25	DataWare Technologies Inc.	12.00	-0.25	-2.0
OTC	6.75	2.50	Easel Corp.	3.13	0.13	4.2
OTC	29.25	14.25	Filenet Corp.	24.88	0.13	0.5
OTC	25.00	3.00	6th Dimension	1.38	-0.19	3.6
OTC	10.00	8.13	Frame Technology	13.75	1.75	13.5
OTC	31.25	13.50	FTP Software Inc.	26.00	0.00	0.0
OTC	11.00	2.00	Group 1 Software	10.13	0.13	1.3
OTC	31.75	6.75	Gupta	12.63	-0.75	-5.6
OTC	10.88	5.13	Hogan Systems Inc.	6.00	0.25	4.3
OTC	40.25	30.00	IMRS	33.03	-2.47	-7.0
OTC	58.75	11.25	Information Resources	14.50	0.50	3.6
OTC	29.88	14.25	Informix Corp	28.38	2.50	9.7
OTC	41.25	7.75	Intergraph Corp.	7.88	-0.75	-8.7
OTC	8.75	2.50	Interleaf Inc.	4.00	-0.13	-3.0
OTC	18.00	8.63	Intersolv Inc.	16.13	-0.50	-3.0
OTC	75.75	27.00	Intuit Inc.	80.00	1.13	1.7
OTC	38.75	2.25	KnowledgeWare Inc.	3.94	0.06	1.6
OTC	34.75	19.00	Legent Corp	30.75	0.75	2.5
OTC	86.50	29.75	Lotus Development	44.75	5.13	13.1
OTC	17.75	4.63	Magic Software Enterprises (L)	4.88	-0.25	-4.9
OTC	15.50	6.00	Manugistics Group Inc.	7.38	0.38	1.6
OTC	27.50	16.75	MapInfo Corp.	21.25	-1.50	-6.6
OTC	7.50	2.44	MathSoft	2.88	-0.50	-14.8
OTC	17.00	5.88	McAfee Associates	15.50	1.75	12.7
OTC	17.75	8.38	Mentor Graphics	13.50	0.63	4.9
OTC	20.00	11.50	Micro Focus	14.25	0.50	3.6
OTC	11.63	4.63	Micrografx Inc.	5.50	-0.38	-6.4
OTC	81.13	39.00	Microsoft Corp.	62.38	0.13	0.2
OTC	31.00	11.75	NetManage Inc.	25.25	0.00	0.0
OTC	46.50	26.75	Oracle Corp.	38.88	-0.88	-2.1
OTC	80.25	21.50	Parametric Technology	34.63	1.88	5.7
OTC	24.50	13.38	ParcPlace Systems Inc.	18.81	0.81	4.5
OTC	66.25	26.00	PeopleSoft	62.19	2.69	4.6
OTC	8.13	3.63	Phoenix Technologies	6.88	-0.06	-0.9
OTC	73.73	34.00	PowerSoft (H)	73.50	5.50	8.1
OTC	29.75	3.50	Platinum Software	12.25	-0.50	-3.9
OTC	23.75	9.00	Platinum Technology	18.75	-0.75	-3.8
OTC	56.75	27.00	Progress Software Corp.	37.00	2.75	8.0
OTC	4.13	1.88	Quarterdeck Office Sys.	2.25	0.31	16.1
OTC	24.00	9.38	Rainbow Technologies Inc.	12.00	-0.75	-6.3
OTC	9.25	2.38	RasterOps	3.00	0.00	0.0
OTC	9.50	3.88	Ross Systems	5.00	-0.63	-11.1
OTC	23.25	2.31	Sapiens Intl. Corp. N.V.	2.31	-0.19	-7.5
OTC	21.00	9.75	Softkey International Inc.	18.75	-0.13	-0.6
OTC	8.63	3.00	Software Publishing Corp	5.38	-0.25	4.9
OTC	10.00	3.00	State of the Art	7.38	-0.13	-1.7
NYS	35.63	25.00	Sterling Software Inc.	32.00	3.25	7.6
OTC	19.88	3.61	Struct. Dynamics Research	6.25	0.00	0.0
OTC	57.00	25.25	Sybase Inc.	47.50	2.63	5.8
OTC	59.63	9.88	Symantec Corp	17.25	0.00	0.0
OTC	49.75	33.00	SynOptics	40.75	-1.25	-3.0
OTC	16.00	10.63	System Software Assoc.	14.38	0.50	4.0
OTC	6.75	3.25	Trinzic Corp	5.50	0.38	7.3
OTC	50.00	12.75	ViewLogic Systems	30.25	-1.50	-4.7
OTC	23.75	12.75	VMark Software Inc.	14.00	0.00	0.0
OTC	13.25	6.00	Walker Interactive Systems (L)	6.13	-0.63	-9.3
OTC	60.00	29.75	Wall Data Inc.	35.50	0.25	0.7
Semiconductors						
NYS	31.75	16.75	Advanced Micro Devices	24.88	-0.38	-1.5
NYS	36.75	21.13	Analog Devices Inc.	33.13	-0.75	-2.2
OTC	37.63	12.88	Atmel Corp	33.63	-0.75	-2.2
OTC	7.50	3.63	Chips and Technologies	7.31	0.69	10.6
OTC	44.63	24.63	Cirrus Logic (L)	24.63	-0.88	-3.4
NYS	34.13	11.88	Cypress Semiconductor Corp	22.88	0.13	0.6
NYS	20.13	11.00	Dallas Semiconductor	14.25	-0.13	-0.9
OTC	39.25	14.75	Integrated Silicon Systems	26.00	0.75	3.0
OTC	73.50	58.00	Intel Corp.	62.38	-1.50	-2.3
NYS	45.38	11.21	LSI Logic Corp.	40.63	1.13	-2.7
OTC	20.13	13.00	Lattice Semiconductor	16.75	0.63	3.9
NYS	64.88	37.44	Micron Technology	41.75	0.75	1.8
NYS	81.13	42.13	Motorola Inc.	56.38	-0.25	-0.4
NYS	25.00	14.38	National Semiconductor	17.63	-0.13	-0.7
OTC	16.25	6.75	Sierra Semiconductor	14.25	0.63	4.4
NYS	89.50	58.75	Texas Instruments	74.63	-1.75	-2.3
OTC	16.38	9.38	VLSI Technology	11.88	0.63	5.6
OTC	10.00	3.88	Weitek	3.25	0.00	0.0
ASE	20.38	8.61	Western Digital Corp.	18.88	0.13	0.7
OTC	61.00	29.00	Xilinx	57.50	1.00	1.7
OTC	97.75	23.75	Zilog Inc. (L)	27.75	1.63	6.2
Peripherals and Subsystems						
OTC	30.50	14.50	American Power Conversion	16.50	-0.13	-0.8
OTC	27.35	18.75	BancTec Inc	21.75	0.63	3.0
OTC	6.31	3.25	Cambex Corp	3.88	-0.38	-8.8
ASE	1.25	1.38	Cognitronics Corp (L)	1.81	0.06	3.6
NYS	20.50	10.75	Conner Peripherals	13.30	0.13	1.0
OTC	24.00	9.75	Creative Technologies Inc.	12.63	-0.25	-1.9
OTC	13.21	3.50	Data Race Inc.	4.38	-0.13	-2.9
ASE	9.63	4.13	Dataram Corp	6.50	0.13	2.0
NYS	34.00	12.38	EMC Corp.	15.25	-0.50	-3.3
OTC	12.38	3.13	Emulex Corp	5.38	-0.25	-2.8
OTC	21.00	11.25	Evans & Sutherland	13.75	1.63	13.4
OTC	24.00	14.00	Exabyte	20.00	-0.50	-2.4
OTC	26.88	2.63	Intelligent Intl. Systems	2.75	0.25	-8.3
OTC	3.30	1.38	Iomega Corp	3.38	0.06	1.9
OTC	0.75	2.63	IPL Systems Inc. (L)	2.75	0.00	0.0
OTC	28.88	31.75	Komag Inc	26.00	1.25	5.3
OTC	8.63	2.63	Maxtor Corp	4.50	0.13	2.9
OTC	9.38	4.00	Micropolis Corp	9.00	0.38	4.5
OTC	20.50	10.13	Pinnacle Micro Inc.	10.13	-1.25	-11.0
OTC	29.50	6.50	Printronix Inc.	29.50	3.00	11.3
NYS	10.75	6.88	QMS Inc	8.25	1.00	10.8
OTC	20.25	11.63	Quantum Corp.	16.88	0.75	1.6
OTC	18.75	7.38	Radius Inc.	9.63	-0.75	0.3
NYS	17.00	6.38	Recognition International	7.13	-0.13	-1.7
OTC	6.88	4.00	Rexon Inc	4.88	-0.25	-4.9
OTC	38.75	18.63	Seagate Technology	24.00	-0.25	-1.0
NYS	41.50	21.00	Storage Technology	30.38	0.75	2.5
NYS	40.38	21.50	Tektronix Inc.	36.88	0.88	2.4
NYS	112.75	80.50	Xerox Corp.	96.13	-2.63	-2.7
Services						
OTC	16.50	11.66	American Mgmt. Systems	16.50	-0.13	-0.6
NYS	4.25	2.13	Anacomp Inc. (L)	2.25	0.00	0.0
OTC	20.75	14.50	Analysts Int'l	20.25	0.75	3.5
NYS	58.88	47.63	Auto Data Processing	55.00	-1.88	-3.3
OTC	49.50	14.00	Cambridge Tech. Partners	17.25	-0.88	-4.8
NYS	27.30	18.13	Ceridian Corp	25.00	0.13	0.5
NYS	26.75	17.25	Comdisco Inc	22.00	0.63	2.9
OTC	15.00	8.50	Computer Horizons	15.00	0.38	2.6
NYS	48.13	30.66	Computer Sciences	46.00	0.13	0.3
NYS	10.38	6.63	Computer Task Group	7.88	-0.13	-1.6
NYS	26.38	6.75	CompUSA Inc.	13.13	0.38	3.0
OTC	11.38	5.50	Control Data Systems Inc.	6.25	0.25	4.2
OTC	31.00	8.13	Egghead Discount Software	10.13	0.94	10.2
NYS	38.50	28.73	General Motors E (EDS)	36.38	0.00	0.0
OTC	21.00	7.25	Inacom Corp	9.00	-0.88	-7.1
OTC	28.00	12.38	Intelligent Electronics (L)	13.00	0.06	0.5
OTC	22.50	7.00	Merisel	8.00	-0.88	-9.9
OTC	32.50	9.25	Microage Inc.	13.81	0.25	2.2
OTC	40.50	28.50	Paychex	35.25	-0.75	-2.1
NYS	47.75	33.63	Policy Management Sys.	40.25	0.13	0.3
NYS	28.75	19.25	Reynolds and Reynolds	25.13	0.13	0.5
OTC	38.50	17.00	SEI Corp.	19.50	0.50	2.6
OTC	31.38	21.88	Shared Medical Systems	29.00	0.19	0.6
OTC	8.13	4.13	SHL Systemhouse	6.31	-0.06	-1.0

KEY: (H) = NEW ANNUAL HIGH REACHED IN PERIOD (L) = NEW ANNUAL LOW REACHED IN PERIOD
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NetWare 4.1 debut

CONTINUED FROM PAGE 1

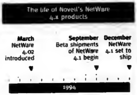
Preferred Systems, Inc. in West Haven, Conn., the developer of DS Standard.

DS Standard is a Windows-based tool that gives the user a split-screen view to find and convert NetWare 3.x binderies into objects that will reside on the NetWare Directory Services (NDS) tree.

Users said DS Standard dramatically cuts the time and effort involved in the migration. "I was able to configure my NetWare 4.1 servers and upgrade from 3.x to 4.1 in about 3½ hours for each server," said Terry Storey, a senior LAN analyst at a major international investment bank in London. "It cut my configuration and installation time by more than half."

Novell has also simplified network management by merging almost three dozen utilities into one NetWare Administrator interface. And unlike past versions of NetWare 4.x, NetWare 4.1 does not bind users to the directory tree they originally set up. Users can prune and graft directory trees as they see fit.

Novell is also trying to ease migration for users at the pricing and licensing level. For example, all users of NetWare Versions 4.0, 4.01 and 4.02 will be able to upgrade to NetWare 4.1 for free, said Jim Greene, product line manager for NetWare 4.1 at Novell. Currently, the price for a user to upgrade from NetWare 3.x to NetWare 4.02 is $3,195.



Anticipating that Microsoft Corp. will counter the NetWare 4.1 launch by undercutting the price of its Windows NT server product (as it has in the past), Novell is readying a low-cost, promotional upgrade for 2.x and 3.x users, said Waverly Deutsch, an analyst at Forrester Research, Inc., a consultancy in Cambridge, Mass. She said Novell is considering offering the 3.x upgrade for "next to free."

Potential pricing plan

Greene did not deny that this pricing scenario was under consideration. This is especially key because Microsoft Vice President Dwayne Walker has stated that his company hopes to pick off NetWare 3.x users looking to upgrade their network operating system.

"We are not going to let pricing be an obstacle in getting users to move to NetWare 4.1," Greene said. "If the price is an obstacle, we will remove that obstacle."

Users said they appreciate this sentiment.

"I'd like to see it cost under $500," said Mark Herder, manager of data communications at Dartmouth Hitchcock Medical Center, a 100-user site in Lebanon, N.H. "I don't want to see them break it out into per-seat pricing." NetWare 4.02 carries a street price of $5,717 for a 100-user license.

Novell already stratified its NetWare 4.1 pricing so users can buy additional license packs for five or 10 users. Previously, Novell forced sites to jump from 100 to 250 to 500 users.

Next year, Novell plans to move its server-based concurrent pricing model to a directory-based structure, Greene said. This model would allow a company to pool its NetWare licenses across the entire wide-area network. This would be a huge boon to users in an enterprise.

Greene said Novell will implement directory-based pricing in the next version of NetWare 4.x. He said Novell tried to incorporate the technology into NDS too late in the development process for it to make the NetWare 4.1 delivery. This upgrade to NetWare 4.1 should be available in the second half of next year, Greene said.

Novell's PerfectOffice 3.0 scores high in a test-drive. See page 39.

Chrysler drives upgrade

Chrysler has upgraded its corporate offices with high-speed networking equipment as part of a massive two-year effort to install a client/server infrastructure.

The automaker has installed 400-plus SynOptics Communications, Inc. hubs and more than 150 Wellfleet Communications, Inc. routers, which are used to connect more than 12,000 TCP/IP-based PCs — a mix of IBM machines and clones.

An OC-3 Synchronous Optical Network ring — dedicated to carrying only router traffic — connects three engineering and two data processing divisions in the Detroit metropolitan area. Frame relay is used for commercial services over the wide-area network, with T1 connections between Chrysler's headquarters and its manufacturing and assembly plants.

To mitigate risks associated with new network and client/server technology, Chrysler's IS staff has made every effort to conform to standard hardware platforms, operating systems, protocols and off-the-shelf applications when possible.

These include frame relay, Fiber Distributed Data Interface and Hewlett-Packard Co.'s OpenView for network management.

While the company said it believes that these technologies will help propel it into the future and make it more competitive, the learning curve does entail some growing pains.

Learning the hard way

Moving to client/server on such a broad scale "is a very painful experience," said Chris Waters, a senior telecommunications specialist at Chrysler. "Every time you put a new technology out there, you of course need to support it. And getting over that learning curve is painful."

Chrysler's challenge during the next two years will be to transition its classic SNA applications to the new infrastructure. How that will be accomplished remains unclear.

For example, Chrysler is unsure what to do with the dumb terminals at the company's manufacturing and assembly plants, according to David Bonskey, manager of network planning and operations. These terminals cannot communicate with users over the TCP/IP corporate backbone, but replacing them with intelligent PCs may be overkill, he said.

— Stephen P. Klett Jr.

Carmaker

CONTINUED FROM PAGE 1

Bonskey, manager of network planning and operations at Chrysler's IS department here.

Chrysler is still putting the finishing touches on this backbone, which was designed to provide a common data highway for all of the automaker's employees (see story above).

However, Bonskey attributed the cost overruns to the breadth of Chrysler's project and said he expects savings to accrue once the migration to TCP/IP is complete. "We believe we haven't seen the expected savings yet because it's not a total, instantaneous migration — it will take some time," he said.

Despite the rough patches in the road, Chrysler technology implementors said they would not have done it any other way.

"You have to have the proper highway in place to successfully move to a large client/server environment," Bonskey said. "Otherwise, your network can resemble an L.A. freeway at rush hour."

Original moves

The mix of TCP/IP and SNA traffic currently stands at roughly 50/50. However, SNA has a zero growth rate. Every new PC is an IP connection all the way from that terminal to the host.

According to analysts, Chrysler's client/server focus in moving from a mainframe-centric legacy network to an IP internetwork is unique among the ranks of commercial companies.

"Many existing client/server applications today have come from a bottom-up direction — departments doing ad hoc implementations that, when rolled out on a corporate basis, bog down their network," said Lynn Berg, vice president of distributed computing strategies at Gartner Group, Inc. in Stamford, Conn.

Restricted use

According to Berg, more than 90% of Gartner Group clients worldwide are implementing client/server in some form. However, most use is restricted to workgroup or departmental applications rather than on an enterprisewide level.

In addition to standard off-the-shelf applications from WordPerfect, the Novell, Inc. Applications Group, Lotus Development Corp. and Microsoft Corp., between 50 and 60 homegrown client/server applications are being written and are in various stages of implementation, according to Chris Waters, senior telecommunications specialist at Chrysler.

Chrysler Corp. vital stats

- Headquarters: Highland Park, Mich.
- 116,000 employees worldwide
- 2,746,000 vehicles sold by 7,000 dealers in more than 100 countries in 1993
- 1993 revenue: $43.6 billion

New in-house-developed applications include those for human resources, warranty information and all Chrysler financial and dealer information. In addition, of the more than 250 Novell file servers the company has rolled out, at least 150 are dedicated application servers, he said.

"That's certainly very advanced — and also risky," Berg said. "There's no clear market leader in any of the current client/server technology that can't be eclipsed by any new technologies." To be safe, observers said, users should make sure they have an architecture that does not lock them in to any particular set of tools and thus limit their flexibility.

"We're mindful of where the industry is going and are adhering to standards where possible," Bonskey said. And the company knows "that we need to be agile to adapt to any new technology that comes out," he added. Chrysler is also renting equipment where possible to avoid getting locked in to a particular vendor or platform.

Taking it easy

Waters added that Chrysler is also being very cautious in rolling out applications. The company is piloting Notes, for instance, but will not roll it out to the rest of the company any time soon because "it's a resource hog," he said.

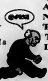
Despite Chrysler's cautious stance, however, some of the company's client/server implementors acknowledged having to take some chances when dealing with new technology.

"No guts, no glory — right?" quipped Karen Wrobel, a telecommunications network specialist.

Wysiwyg

What's a couple OF ZEROS?

C. G. Blodgett's auto insurance rate tripled when he turned 101 because the computer program reckoned him to be a teenager. He was the program's first driver over 100, and the program interpreted his age as 1, fitting the program's definition of a teenager as someone under 20.



Source: *Computer Related Risks*, Peter G. Neumann, ACM Press, New York

ROBOCIDE

An assembly line robot was programmed to apply a dollop of a complex liquid adhesive to a product. Instead, it reportedly got hold of a highly active solvent, which the robot applied to itself, dissolving its own electronics.

Source: *Computer Related Risks*, Peter G. Neumann, ACM Press, New York

Dog-and-Pony Show

Told that sales rep, No No No
But I guess I gotta go
All their products in a row
With a green and yellow bow
Quite a furrow they did hoe
A lot of air they sure could blow
Not much to say; but they did crow
They swore my company would grow
Their forecasts gave a rosy glow
Down their competitors they did mow
A tidy deal they said they'd sow
But no one knew what I would owe
Next time, YOU I plan to tow
So don't bother shouting whoa!

Steve Wallace
MIS manager, Harris Moran Seed Co., Pleasanton, Calif.

[illegible] Illustrations by David Marshall. Want to contribute to WYSIWYG? [illegible] Contact Tim Ouellette at (800) 343-6474 or via the Internet at touel@cw.com

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Inside Lines

Reports of its death were premature

IBM sent out a six-paragraph note on the Internet last week declaring that its AIX Unix operating system is not dead. The unusual statement was prompted by a Nov. 21 report in the "Unigram-X" newsletter stating that IBM would discontinue AIX after Version 4.2 — possibly in favor of Sun Microsystems' Solaris. "IBM was not contacted for this article, which relies on unnamed sources to concoct a story that is plain nonsense," fumed Bill Filip, general manager at IBM's RISC System/6000 Division. "AIX is very strategic to our customers and to the IBM company."

Who is P&G gonna call?

Procter & Gamble is close to naming a company that will provide it with what it calls "centralized support for nonstrategic workstation needs," such as hardware and software order fulfillment and installation. The vendor will also handle all internal help desk operations. The Cincinnati-based consumer goods giant is now finalizing a contract with the outsourcer, according to a company spokesperson.

IBM's retail reach

This week, ComputerLand will announce a national service agreement with IBM whereby IBM will provide ComputerLand customers with multivendor hardware and software support at the retailer's 220 locations nationwide. ComputerLand will provide customers with access to more than 2,000 IBM software and more than 10,000 IBM hardware staffers. Sources close to the companies said the retailer expects the deal to help push its services revenue up 50% in 1995.

Miracle on the information highway

E-mailers were busy adding to a thread on one of the many Microsoft and Bill Gates-related newsgroups on the Internet last week titled "What would Bill ask Santa for?" The question was moot for one respondent who said there is no Santa anymore. "Santa's Workshop has been bought out by Microsoft's newly formed division, The Microsoft Youth," he wrote.

Across the great divide

Looking to help client/server bigots make their peace with the mainframe, Sybase plans to build application development libraries for its Sybase System 10 database into its Open Server/Mainframe interoperability and application porting tool. The move is scheduled for the first quarter of 1995. Open Server/Mainframe's current libraries differ enough from the System 10 libraries to discourage users from bringing big iron into the picture "unless there is a compelling reason," a Sybase official said. Sybase expects to finalize a deal this month with IBM's mainframe division to lend a hand on the project.

Bah-dah-bing! Intel overtook O. J. on the joke circuit last week, as evidenced by this sampling of Pentium humor making the rounds on the Internet: Did you hear about the new "morning-after" pill being developed as a replacement for RU-486? It's called RU-Pentium. It causes the embryo not to divide correctly. Q: What's another name for the "Intel Inside" sticker on Pentium PCs? A: Warning label. Q: What do you get when you cross a Pentium PC with a research grant? A: A mad scientist. Q: Why didn't Intel call the Pentium the 586? A: Because it added 486 and 100 on the first Pentium and got 585.999983605. Q: According to Intel, the Pentium conforms to IEEE standards 754 and 854 for floating point arithmetic. If you fly in an aircraft designed using a Pentium, what is the correct pronunciation of "IEEE?" A: Aaaaaiiiiiiiieeeeeeeeee! Q: How many Pentium designers does it take to screw in a lightbulb? A: 1.99904274017, but that's close enough for nontechnical people. To share a good laugh or pass along any news items or tips, call Computerworld*'s 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. New Editor Maryfran Johnson can be reached by phone at (508) 820-8179, via the Internet at mjohnson@cw.com or through MCI Mail at 590-8017.*